ENGINEERING NEWS-RECORD

How much construction do consultants supervise? p. 25

A McGRAW-HILL PUBLICATION

E B POWER
UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR

Increasing deoxidation—a key step in the manufacture of new 4-D Wrought Iron.

Now—from Byers Research—
an even better Wrought Iron
for modern corrosion control—

new 4-D wrought iron

Out of the laboratory and into production comes a newly formulated Wrought Iron to strengthen man's arsenal of corrosion resistant weapons.

New 4-D Wrought Iron is at least 25% *more* corrosion resistant than standard Wrought Iron—long an industry standard for superior corrosion resistance. This significant metallurgical advance is the result of 17 years of continuing research by Byers metallurgists.

And here's what it means to you.

Seventeen-year in-service and laboratory tests prove that 4-D Wrought Iron is superior not only to standard Wrought Iron, but has much greater corrosion resistance than other materials which are sometimes offered as substitutes. Thus, the economy of using standard Wrought Iron can now be compounded through the use of new 4-D Wrought Iron.

In addition to increased corrosion resistance, new 4-D Wrought Iron has greater uniformity and improved physical and mechanical properties. This is attained by substantially increasing the deoxidation of the base metal, increasing its phosphorous content, and using a more siliceous slag.

And the price of new 4-D Wrought Iron? No increase. Despite higher production costs, the price of Wrought Iron will remain the same.

Write us for new 4-D Wrought Iron literature, or contact the Byers representative for complete details. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE AMBALLOY STEEL PRODUCTS AND PVC PIPE

Corrosion costs you more than Wrought Iron

GOODYEAR INDUSTRIAL PRODUCTS

G.T.M.-Specified

Contractor's Air-Water Hose for Construction Work

A Rugged cover that's both abrasion- and sun-resisting—continuously print-branded for easy identification

B Extra-tough braids of high-tensile rayon cord to handle pressures, resist crushing or kinking

C Special nonporous tube resists alkali or slightly acid water

Now—a hose that's built for builders

Say good-by to the big inventories of both air hose and water hose most big construction jobs always required. Here, in a new kind of hose that handles the jobs of either one – you have the means of wiping out time-eating handling as well as profit-eating costs.

Goodyear and the G.T.M. – Goodyear Technical Man – developed and built this hose just for contractors. As an air hose, it accommodates pressures up to 200 psi. Or, as a water hose, it's ideal for filling, supply and wash-down service. And it's available in continuous lengths up to 500 feet (in the ¼-inch size).

What's more, it gives you the super-toughness any contractor's hose must have. Muscular, high-tensile rayon cord reinforcements handle the high pressures and resist kinking or crushing – yet give you exceptional flexibility for easy handling. And an extra-tough cover resists abrasion, weathering, or any other kind of punishment construction work usually dishes out.

Wouldn't it pay *you* to look into this great new hose? It's one of more than 800 Goodyear hoses designed for every hose job. And they're all available through your Goodyear Distributor—or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

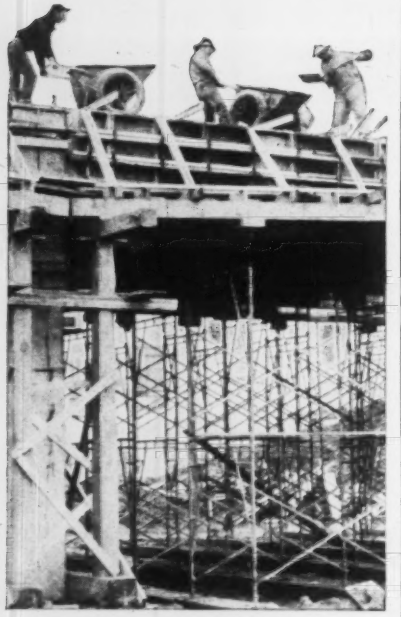
CONTRACTOR'S AIR-WATER HOSE by

GOODYEAR

60 GOODYEAR

THE GREATEST NAME IN RUBBER

Bridge Forming



Symons Forms Cut 100 Days Off Bridge Forming Job

Ease of Erecting and Stripping Reduces Pouring Time

Contractor Lee Hoffman, Beaverton, Oregon, was given 320 days to pour 4,000 cubic yards of concrete for a bridge over Myrtle Creek in Oregon. Job was complete in 220 days or only ⅔ the time allotted.

Harry Pajutte, Chief Engineer for Hoffman, credits the ease of erecting and stripping Symons Standard High Strength Forms with contributing substantially to cutting pouring time, reducing number of men required on job, and providing greater mobility for the pouring equipment. Only

JUST 3 PIECES

3,144 square feet of panels were required for the 160,000 square feet of forming.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Facts on Symons products and engineering service available upon request.

Symons

SYMONS CLAMP & MFG. CO.

4265 Diversey Avenue, Dept. C-8
Chicago 39, Illinois

ENGINEERING NEWS-RECORD

EIGHTY-FOURTH YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600; Washington - REpublic 7-6630

Editor, Waldo G. Bowman

Senior Staff Editor, Arthur J. Fox, Jr.

Senior Editors, Frederick S. Merritt, Howard Jacoby

Highways, Airports—Transportation
Edward M. Young, Jr.
Marc Leggiero, Louis A. Volse

Buildings, Bridges—Structures
Frederick S. Merritt
James B. Sullivan, Marianne Stern

Rivers, Sanitation—Water Resources
Howard Jacoby
Joseph N. Todaro, John P. Mahoney

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding, Stuart D. Boynton

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Stanley C. Jensen, *Chief*
Barbara Lamb
Evelyn Stepic
Shirley Winterton
John C. Greenough

Presentation
Harry W. Jensen, Philip J. Horn, Jr.

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra
Diane Tartaglia, Marie Moravsik
James Webber, Ruth Carlson, *Economics*
Marie Roessler, Evelyn Huber, *Statistics*
David Farquhar, Bertha Herrmann, *Prices, Unit Prices*

Editorial Research and Indexing
Helen Rich
Eva Gierat, Rene Hay, Patricia Witschger
Elise Delano, Lucille Mesa

Consulting Editors: Van Tuyl Boughton, *New York*
Nathan A. Bowers, *San Francisco*

Advertising Sales Manager: Donald S. Robertson

Circulation Manager: Edward F. Bressler

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Clyde C. Henning, Sam J. Justice, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Morton A. Reichek, V. Craig Richter, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureau: Cleveland—55 Public Square, Cleveland 13, William G. Meldrum, Michelle M. Perry; **Detroit**—856 Penobscot Bldg., Detroit 26, Donald MacDonald, Chief, Nancy Moore; **Pacific Coast**—68 Post Street, San Francisco 4—Margaret Ralston, Chief, Jenness Keene, Sue Johnson, 1125 West 6th Ave., Los Angeles 17—John K. Shinn, Michael J. Murphy; **Seattle**—6040 Fifth Ave., N. E., Ray Bloomberg; **Southeastern**—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Southwestern**—901 Vaughn Bldg., Dallas, Kemp Anderson, Jr., Chief, Lorraine Smith.

Foreign News Bureaus: New York—John Wilhelm, Editor; **London**—William J. Coughlin; **Paris**—Robert E. Farrell; **Rio de Janeiro**—Peter Weaver; **Mexico City**—Jack Kearney; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Dan Kurzman; **Melbourne**—Alicja Grobtuch. Correspondents in 55 cities throughout the world.

Correspondents: In 79 principal cities in the U. S. and possessions and Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 160, No. 10, MARCH 6, 1958

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices. McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Drector of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single 50 cents; foreign $20.00 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A. Title registered in U.S. Patent Office.

© Copyright 1958 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

What is the Crane Combination YOU need?

NORTHWEST Crane Equipment is so designed as to meet any crane problem you may have. There is a wide range of boom hoist equipment. Mast-type gantry with the sectional boom hoist rigging and pendent lines make possible ease of adjustment to boom length changes. You have a choice of two or three sheaves at the boom point. Adjustable jib, telescopic boom struts, removable counterweight, extended boom point sheave shaft for piledriver leads—all can be had to meet your requirements. And, if you need long crawlers and wide treads, they're available.

STANDARD BOOM HOIST

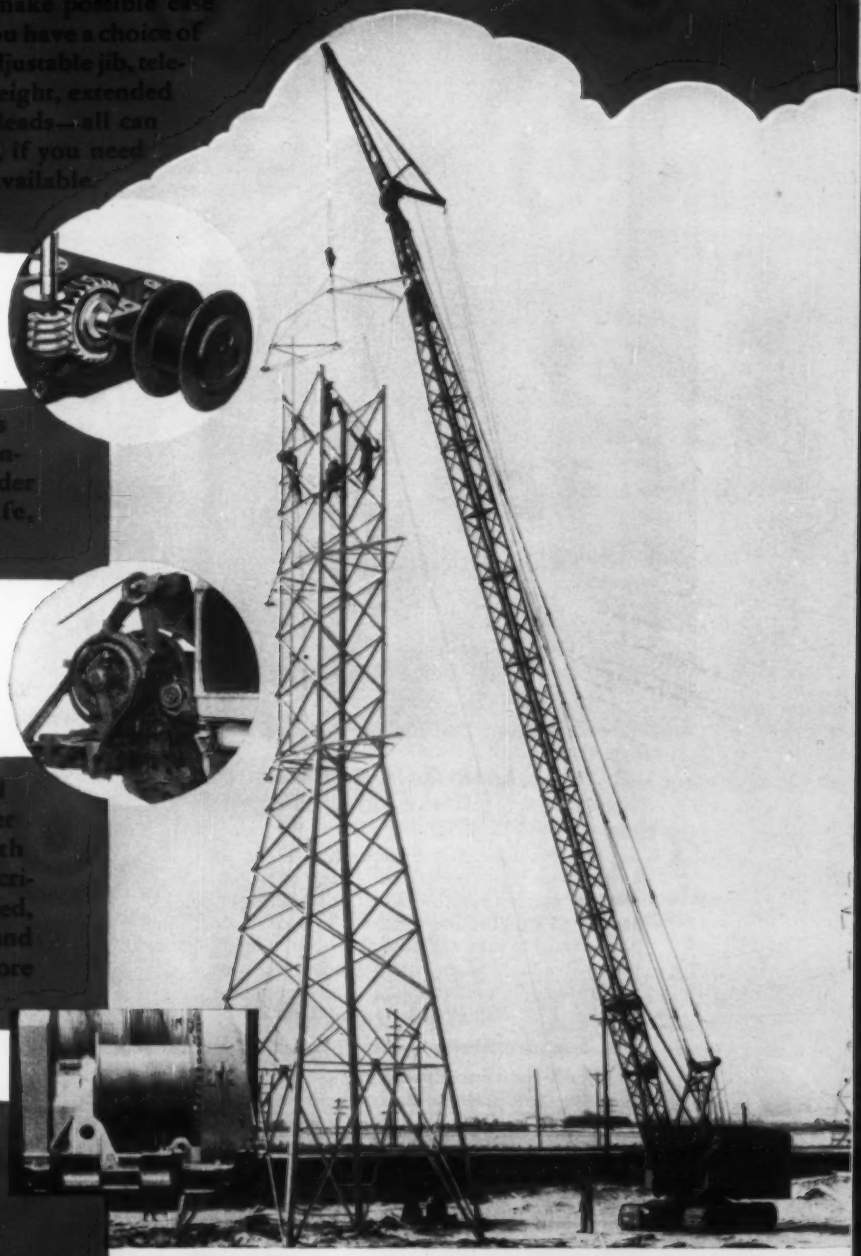
The Northwest Standard Boom Hoist is a self-locking worm gear boom hoist running in an oil bath and it operates under power both up and down. It is safe, smooth, positive!

INDEPENDENT HIGH-SPEED BOOM HOIST

The Northwest Independent High-Speed Boom Hoist is independent of all other operations and permits booming with power controlled lowering without sacrificing either of the main drums. It is a rugged, heavy-duty unit capable of hour in and hour out operation. There is no finer, more reliable hoisting assembly.

THIRD DRUM

The Northwest 3rd Drum operates independently of the main drums and is fitted with its own clutch and brake. It makes possible 3 load lines with a standard worm boom hoist; and 3 load lines with the independent high-speed boom hoist.



NORTHWEST ENGINEERING COMPANY
1502 Field Building • 135 South LaSalle Street, Chicago 3, Illinois

PRODUCTION PLUS · MEANS MONEY ·

C95-3-1CG

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Greater usable hp in shovel-cranes !

Link-Belt Speeder delivers extra power at the drums for easier digging, faster cycles, greater profit

Because the Link-Belt Speeder line is the industry's most advanced in design, metallurgy, and fabrication —every machine is an extra-strength shovel-crane. It has the added guts and stamina, the smooth-operating power train to take full advantage of the bonus horsepower available in engines (at operating speeds well within the engine manufacturer's recommendations).

Other Link-Belt Speeder advantages include—

- **Speed-o-Matic**—power hydraulic controls
- **Full-Function design**—a separate power train for each machine function
- **Greater crane capacity**—when using long booms at extended radii

Get the complete details from your distributor or write direct. LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa. Ask for book 2553.

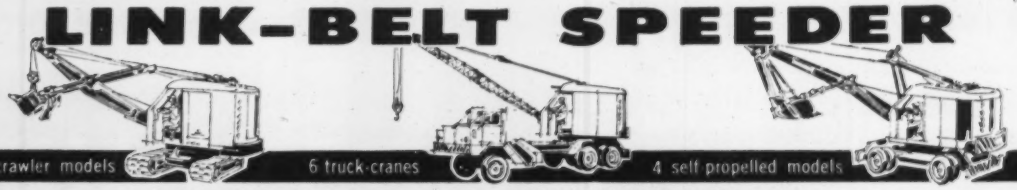
Greater net engine horsepower plus low power-train losses gives you a usable horsepower bonus in the Link-Belt Speeder line.

LINK-BELT SPEEDER MACHINE SERIES	NET ENGINE H.P. (at pinion)	USABLE HORSEPOWER (Power at drums)
58-68 Series ½ to ¾-yd.	55	50
88 Series ¾-yd.	87	78
98 Series 1-yd.	99	89
K-300 Series (1½ to 1¾-yd.)	150	138
K-600 3-yd.	228	212

NOTE: The above figures are maximum for each Series and may vary slightly depending on engine model used.

14.831

LINK-BELT SPEEDER

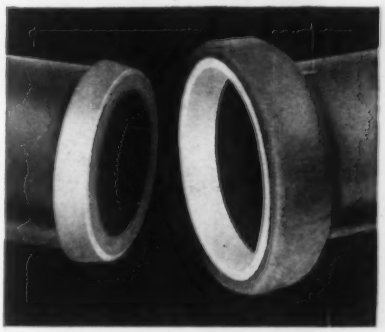


18 crawler models | 6 truck-cranes | 4 self propelled models

It's time to compare . . . with a Link-Belt Speeder

Protect your community's health SIX WAYS with longer, stronger AMVIT Clay Pipe

Outstanding Mechanical Joint
on pipe over 4 feet long
One of your City's Lifelines



Each year thousands of taxpayer's dollars are *wasted* on "substitute" materials used in sewer lines. Failure and collapse of non-clay sewers endangers the health of the community. Sewers must be constructed of permanent materials for they carry to safe disposal thousands of tons of waste laden with dangerous and deadly bacteria.

Amvit Jointed Clay Pipe gives decades of uninterrupted underground service. Neither joint nor pipe is affected by these factors:

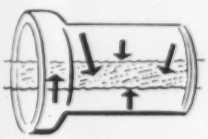
1. ROOTS

force the pipe out of line and clog the system in search of moisture. Amvit is a compression joint on the ball and socket principle. The surfaces of both bell and spigot are in constant compression. Roots cannot enter the line.

2. CHEMICAL ATTACK

is from acid-laden, high temperature sewage, discharged from dishwashers, garbage disposal units and washing machines. Like the clay pipe, Amvit Joint is acid resistant and will not corrode or decompose.

3. FLOW LINE ATTACK



refers to that section of the pipe which lies between low and high water. Grease and scum tend to build up here and acts as a solvent on certain synthetic substitute pipes. The design of the Amvit Joint assures that the pipe is self centered at all times. This gives perfect alignment and self-cleansing.

4. EROSION

is the wearing out of pipe by abrasive action of sand and gravel. Soft pipes become scratched and roughened and tend to clog up. Because Amvit is a really tight joint, no foreign matter can possibly enter the line.

5. DECOMPOSITION

is the chemical breakdown of the component elements of the pipe. Only clay pipe resists decomposition. Like the pipe, the joint is unaffected by ordinary conditions of underground service.

6. RODENTS AND TERMITES

will gnaw away wrappings and coatings of pipe. Amvit Clay Pipe defies even the sharpest toothed rodent and is immune to termite attack.

For more information on how Amvit can help cut your sewer project costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

*T. M. Registered

SINCE 1900

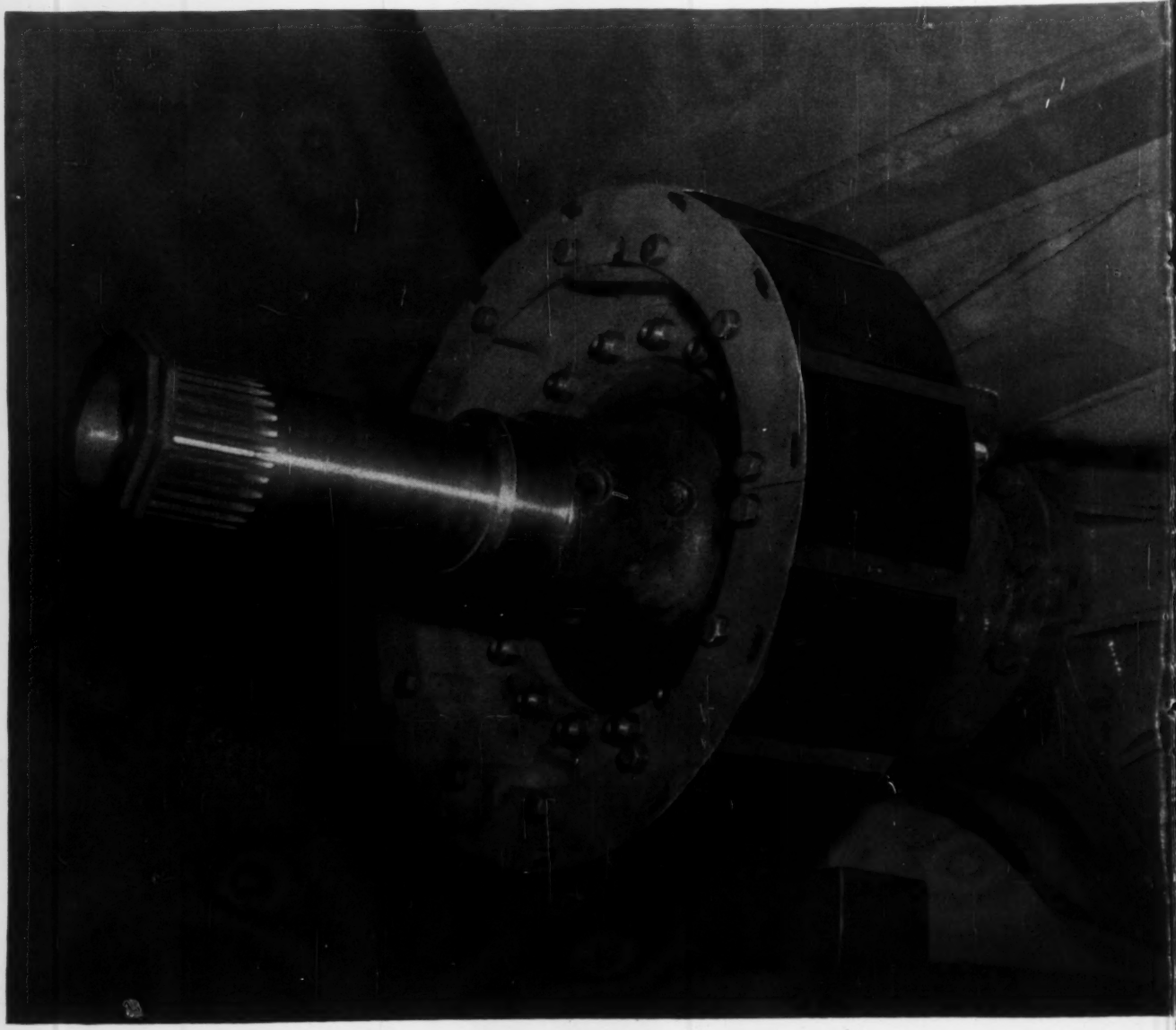
American Vitrified Products Company
CLEVELAND OHIO

MANUFACTURERS OF: Clay Pipe, Flue Liners, Clay Liner Plates and Concrete Pipe.

Plants Across the Nation . . . Brazil, Indiana · Chicago, Illinois · Cleveland, Ohio · Crawfordsville, Indiana · Detroit, Michigan · East Liverpool, Ohio Fenton, Michigan · Grand Ledge, Michigan · Lisbon, Ohio · Los Angeles, California · Milwaukee, Wisconsin · South Bend, Indiana · Uhrichsville, Ohio

New B. F. Goodrich Hi-Torque Brake

THE FIRST AND ONLY WITH FULL-CIRCLE



B.F.Goodrich

OFF-ROAD BRAKE STOPPING POWER

For years B.F.Goodrich wheels and brakes have been landing big commercial and military aircraft. Now, adapting successful engineering design to the heavy duty equipment field, B.F.Goodrich has developed an off-road brake that outperforms other brakes in every case.

It's the B.F.Goodrich Hi-Torque Brake, the *only* off-road brake with reserve capacity to handle the needs of larger and larger equipment. Unlike conventional anchored-shoe brakes that are actuated at only two points, the B.F.Goodrich Hi-Torque Brake actuates with uniform hydraulic pressure under each of *12* shoes.

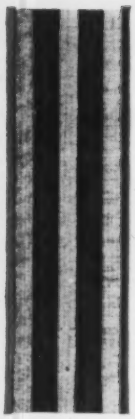
On-job tests prove that the B.F.Goodrich Hi-Torque stops mammoth equipment up to two and a half times faster than ordinary two-shoe brakes. Operators can reduce cycle time by maintaining higher speeds with safety. In addition, automatic adjustment is provided throughout the life of the linings. Full circle actuation allows shoes to follow drum eccentricities. This equalizes lining pressure—makes braking action smoother—reduces fade. And torque is equal in forward or reverse.

If you build or use trucks, tractors, scrapers or any wheeled off-road vehicles, you'll want to know more about this revolutionary new B.F.Goodrich Hi-Torque brake. It installs quickly, easily—requires only a single hydraulic connection. No lubrication necessary.

Free descriptive folder—The B.F.Goodrich Hi-Torque Brake—gives actual on-job test results and specifications of typical sizes up to 26" x 7" with torque capacities exceeding 120,000 pound-feet. Write: B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Troy, Ohio.

The B.F.Goodrich Hi-Torque Brake is now standard equipment on the M-R-S 250 Scraper (left) and 550 horsepower M-R-S 250 Tractor, the world's largest rubber tired scraper combination with a capacity of 34 cu. yds. struck and 43.5 cu. yds. heaped. Designed for use with straight hydraulic or air-over-hydraulic systems, the B.F.Goodrich Hi-Torque Brake is already available on other off-road equipment.

B.F.Goodrich Hi-Torque brakes



HOW TO SAVE 30% +

on concrete forms and finishing costs

SAVE ON FORMING AND STRIPPING. Forms go up faster and easier with handy 4′ x 8′ overlaid panels. Smooth, hard surface speeds stripping time.

SAVE ON RE-USE. The overlaid surface is resistant to harsh aggregates, can be used over and over, eliminates rebuilding forms during job.

SAVE ON SMOOTH, PAINTABLE SURFACES. The hard, glossy form assures smoothest possible concrete, reduces finishing time and labor to a minimum, eliminates expensive plastering. *Specify "Simpson High Density Concrete Form."*

Write for free sample and additional information.

Simpson High Density Overlaid Plywood (Concrete Form) is an exterior-grade fir plywood with a resin impregnated fiber (KIMPREG) applied to both faces under heat and pressure. Available through your distributor.

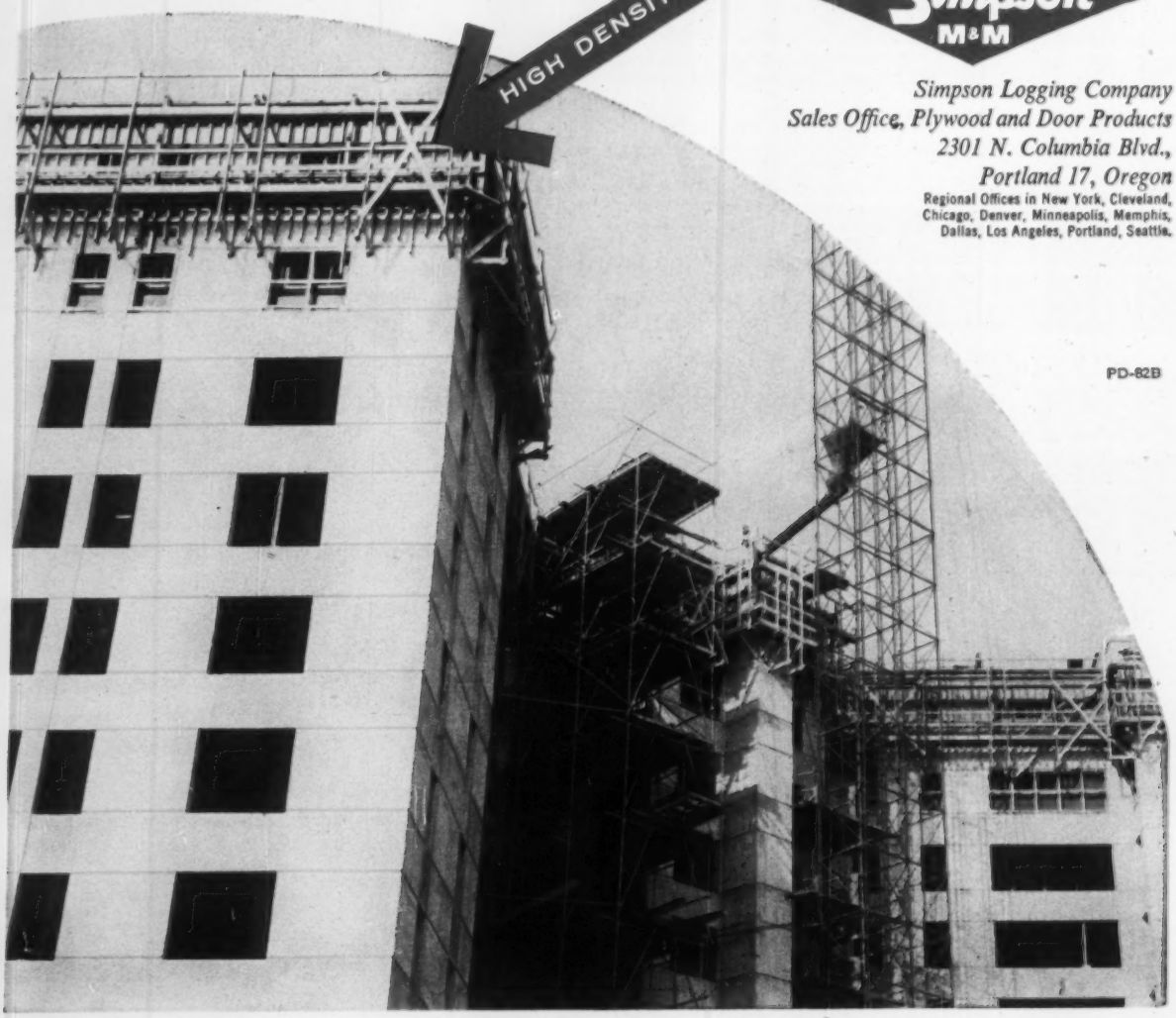
HIGH DENSITY OVERLAID PLYWOOD

RELY ON Simpson M&M

Simpson Logging Company
Sales Office, Plywood and Door Products
2301 N. Columbia Blvd.,
Portland 17, Oregon

Regional Offices in New York, Cleveland, Chicago, Denver, Minneapolis, Memphis, Dallas, Los Angeles, Portland, Seattle.

PD-82B



INCREASE YOUR PROFIT,

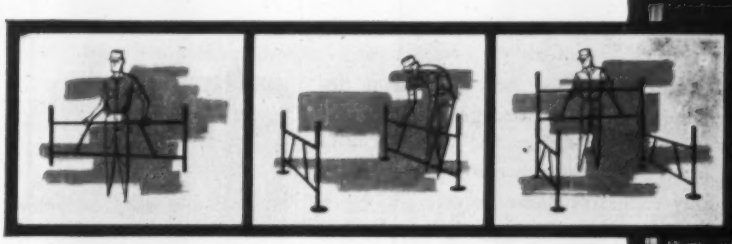
PRESTIGE AND POTENTIAL

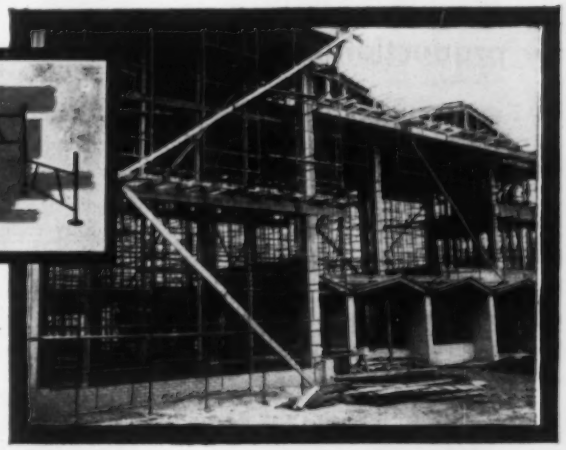
in the Construction Industry...with

Brainard's 4S Engineered Shoring System

Brainard's 4S Engineered Shoring System was designed to fulfill a need in the heavy construction industry for a quick, simple and inexpensive method of shoring up concrete slabs in all kinds of industrial and commercial structures. There has long been a need in the construction industry for a *simplified* shoring system—*safe, sturdy* and one that could be erected with *speed.* Brainard's Engineered Shoring, the 4S System, meets all these requirements.

Brainard's system is composed of a minimum number of parts designed for all shoring applications. All parts can be reused. It has combined strength and versatility, with ease in handling for simplified and speedy erection. Brainard's Shoring System can save substantial construction money for you.





Brainard's Engineered Shoring System is delivered to the job site in components and can be quickly erected by one man. Save time and money with Brainard.

A few select franchises are available for qualified distributors interested in handling this profit line. Write to

Brainard Specialty Products

SHARONSTEEL

493

Brainard Steel Division, Sharon Steel Corporation
Griswold Street, Warren, Ohio

Stop paying a partial production penalty with pooped-out power

Call an International replacement engine specialist for new production-boosting, cost-cutting power

When the engines in your powered equipment are beyond the reasonable repair stage, you start paying a heavy down time and lost production penalty every day you keep them on the job.

That's the time to call in a repower specialist – your nearby International Power Unit Distributor or Dealer. Here's how he can help restore original equipment production:

- Expert analysis made on the job with replacement power check charts.
- Assistance, when required, from International repower engineers.
- Closely matched power from a dependable, economical diesel or carbureted engine in the International line. No under-powering, no need to buy excessive horsepower.
- Fast installation, when desired, and exceptional after-sale service backed with a complete parts stock and always-available service facilities.

Call him in and get his estimate on your next repower job. You'll like production-boosting International power and the service support you get from the man who sells it.

Smooth-performing UD-350 diesel power unit with gear type balancer is but one of 20 dependable, economical repower choices available in the International line. Power range: 16.5 to 250 net hp with your choice of fuel.

International®

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois

Construction Equipment

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Reader Comment

Drafting vs Field Costs

SIR—In my opinion, the emphasis of the article on how to cut drafting room costs was misplaced (ENR Nov. 8, 1956, p. 136). Drafting costs are rarely as much as 10% of fabrication or construction costs and usually are only 5% or less. Therefore, one must be careful not to spend $10 in the field to save $1 in the office.

Some labor-saving devices cost more in the long run than they save; for example, dropped arrowheads, abbreviations, notes in place of sections, unconventional details and omission of details. It is far better to spend more time in the drafting room to make drawings unmistakably clear to the man who has to use them. In light of the above comments, the following are some suggestions:

1. When starting on a job, give a little thought to laying out the work before drawing any lines. Make as neat a drawing as possible; it saves drafting time as well as shop time.

2. The method of dimensioning is important. If a building or piece of steel is dimensioned to the critical "work points" (e.g., center line of columns, beams, major pieces of equipment, or outside face of walls, etc.) minor dimensioning can be referenced to work points and many other superfluous "fill in" dimensions can be omitted.

3. Develop office standard tables, charts, details, notes, etc., to fit your type of work to take care of oft-repeated details. (Used intelligently, this will save thinking the same problem over and over again.)

4. Routine work can be handled by trainees, thus relieving higher paid men for more important work.

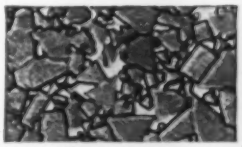
5. Do not try to cut costs by skimping on tools and office equipment; e.g., good tables, well lighted, air-conditioned drafting room, comfortable stools, pencil pointers, etc.

6. General notes can be typed on pressure-sensitive paper and pasted to the tracing.

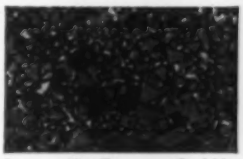
7. Do not crowd your drawings; pa-

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Longer bit life—with *new* Sandvik Coromant Bits



Sandvik Coromant Tungsten Carbide. (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities—therefore stronger, longer-lived.



Low quality Tungsten Carbide. (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give you more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used—as shown in the microphotos above. This means less wear, longer life and a better job.

2 The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

THESE STANDARD SIZES ARE AVAILABLE

	THREAD	DIAMETERS AVAILABLE (IN INCHES)													
SHOULDER TYPE	7/8" F	1½													
	1" H	1½	1⅝	1¾	1⅞										
	1 3/16" D					2	2⅛	2¼	2⅜	2½	2¾	3			
	1 11/16" K											3	3½	4	4½
BOTTOMING TYPE	1¼" Rope				1⅞	2		2¼		2½					
	1½" Rope									2½	2¾	3	3½	4	
	2" Rope												3½	4	4½	5
	400					2		2¼		2½					
	600									2½	2¾	3	3½		

Shaded area indicates X-Bits

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels—the most widely used in the world—and Sandvik Coromant extension steel equipment.

Write, phone or cable today for further details to any of the addresses below:

Atlas Copco

ATLAS COPCO EASTERN *P.O. Box 2568, Paterson 25, N.J. Phone Armory 4-3310*
ATLAS COPCO PACIFIC *930 Brittan Ave., San Carlos, Calif. Phone Lytell 1-0375*
ATLAS COPCO CANADA *Montreal Airport, Quebec. Phone Melrose 1-5571*
ATLAS COPCO MEXICANA *Apartado Postal 56, Torreón, Coahuila. Phone 39-07* DST-75

GIANT for its size

Giant for work, speed-king for set-up and reading, ingenious for ease of operation...and as tough as they come for rugged field conditions.

In surprising and welcome contrast to full size performance is its neat, compact size: just 4½ x 6" overall.

With tilting screw and prismatic tubular level, at a price much lower than you would expect, the Wild N-10 deserves your consideration.

Write for Booklet N-10

N-10 SURVEYOR'S LEVEL

Full Factory Services

WILD HEERBRUGG INSTRUMENTS, INC.

MAIN AT COVERT STREET,
PORT WASHINGTON • NEW YORK
PORT WASHINGTON 7-4843

. . . Reader Comment

per is cheap. Use extra sheets if necessary.

Experience has shown that even the most carefully prepared drawings can be misinterpreted. ENR has reported instances where misread drawings resulted in major structural failures. Therefore, the emphasis in an office should be on clarity and completeness; speed of production is secondary.

RUSSELL S. FLING
Consulting Engineer
Columbus, Ohio

Dream Job?

SIR—I thought your Dec. 12 cover photo was about the best I'd ever seen. It represents certainly "the job I would most like to have." The picture will occupy a place of honor. I'll think of some day working that gate tender's job, when things get hectic here.

A. BRYAN MARVIN
Consolidated Edison Company of New York, Inc.

EDITOR'S NOTE: Here is Reader Marvin's dream job. We must warn him that competition for this job may be heavy in Iraq.

CALENDAR

Building Research Institute, Plastics Study Group meeting, University of Houston, Houston, Tex., Mar. 5-6.

American Concrete Pipe Association, 50th annual convention, Roosevelt Hotel, New Orleans, La., Mar. 9-13.

American Railway Engineering Association, annual meeting, Sherman Hotel, Chicago, Ill., Mar. 11-13.

New Jersey Sewage and Industrial Wastes Association, 43rd annual meeting, Traymore Hotel, Atlantic City, N. J., Mar. 12-14.

National Association of Corrosion Engineers, annual conference and exhibition, Civic Auditorium, San Francisco, Calif., Mar. 17-21.

Nuclear Engineering & Science Conference, 4th congress, in conjunction with 1958 Nuclear Cong., International Amphitheatre, Chicago, Ill., Mar. 17-21.

Conference on Light and Vision, University of Michigan, Ann Arbor, Mich., Mar. 19-21.

American Congress on Surveying & Mapping, 18th annual meeting, Shoreham Hotel, Washington, D. C., Mar. 23-26; in conjunction with **American Society of Photogrammetry,** 24th annual meeting, Mar. 26-29.

4-in-1 outloads "single-action" rigs...

gives 4-machine utility, to boot!

Using Skid-Shovel action—the operator takes time-saving advantage of fast exclusive pry-over shoe break-out action and 42° ground-level roll-back to heap the bucket. Then he uses exclusive non-spill parallelogram lift action to "keep the heap all the way up." This 1½ cu. yd. International Drott 4-In-1 loads up to 120 cu. yd. of bank run gravel per hour—for excavating contractor, Roy M. Wright, Springfield, Mass.! "Can't be matched by any other rig," operator declares!

Cashing-in on earth-rolling bulldozer action, as well as all three other big-capacity actions, Gradyville Services, Inc., Gradyville, Pa., clears, excavates, and grades a 4-acre tract for a trailer park—beats a fleet of old style, limited-duty rigs. "The tractor has plenty of power to handle all 4-In-1 actions," states Operator George Johnson!

Employing carry-type scraper action with inch-close accuracy, this TD-14 4-In-1 provides speedy, labor-saving sub-grading action. Note how the clam lip is regulated to let the earth "boil" in! In addition, this 4-In-1 removed old concrete, and bulldozed—on this Rea Construction Company job, near Rockville, Md.

Putting space-saving clamshell action to work on clean-up, this TD-14 4-In-1 shows how you can practically eliminate costly "hand-shovel-wheelbarrow" methods—get increased job-getting earning power from your loaders. The clamshell fills itself in one fast gulp; gives positive, self-cleanout bottom dumping. Owner: C. W. Atkinson & Sons, Columbus, Ohio.

Move the "machine-selector" lever—compare 4-In-1 versatility and capacity to any "single-action," dip-and-dump loader. See how 4-In-1 multiplies your profit range by four. See your International Drott Distributor for a 4-In-1 demonstration.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL® DROTT®

These TD-24 full-time let you run power circles

Exclusive, all-weather, seconds-fast International gasoline conversion starting. Direct combustion heat conditions the TD-24's engine, seconds-fast—for full diesel performance. You avoid the warm-up delays and service complications of a surplus starting engine—earn money while "slow starters" are warming up!

Exclusive International Cerametallic-faced engine clutch action. The TD-24 is the only king-sized crawler with this big feature. Immune to heat and cold, this long-lasting clutch gives full-load power-transfer efficiency—anywhere, anytime! This dry-type clutch of simplified design eliminates "high frequency" servicing demanded by clutches with "cooling systems."

Exclusive, years-proved Planet Power steering. Why put up with load limiting "dead track drag" on the turns in a king-sized steering clutch crawler? Why not profit from TD-24 Planet Power steering that enables you to pull or push as big a load on the turns as on the straight-away? See how TD-24 two-track turning power never backs off from a load. "Take the turn" to new profits with Planet Power steering!

Exclusive cycle-speeding on-the-go shifting. In either Torque-Converter or Gear-Drive model, the TD-24 gives instant stall-preventing Hi-Lo shifting, without stopping or even declutching. Fingertip matching of speed to load under full power gets the job done sooner!

Exclusive TD-24 fingertip operating ease provides the operator comfort incentives and the means to give full days of full capacity cycle-speeding production!

Find out how these and all the other TD-24 production exclusives can equip you to run power circles around anything else on tracks. See your International Construction Equipment Distributor for a TD-24 demonstration!

Planet Power steering and Hi-Lo "power-crowd" keeps the TD-24 loading the "75" Payscraper® at top effective speed—adds up to increased daily yardage. Only 30 to 45 seconds needed to heap-load a "75" Payscraper—on this Dominic Leone Construction Co., Inc., Colorado road job!

production exclusives

around "cycle-stallers"

Even with such offset loads as a boulder-bucking angled blade—benching a road round a hill—TD-24 Planet Power steering lets you concentrate the power where you want it. You stay on course—production stays up!

On slam-bang rock-dozing or moving other heavy materials, instant TD-24 Hi-Lo shifting adjusts tractor power to load resistance —increases production, avoids delay! And you get fast reversing to speed shuttle-dozing!

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Rock-speeding Payhauler® features hit schedule-beating pace.....

ON US 27

The three-unit "65" Payhauler fleet of Greer Brothers and Young, highball 2,000 cu yd of rock 1,200 feet daily. Rock-moving climbed 'way ahead of schedule, on this U. S. 27 relocation job near Lincoln, Kentucky!

Both Payhauler sizes—the 18-ton "65", and 24-ton "95"—have built-in, schedule-beating performance!

Exclusive high reverse and "zip-around" power steering gives a Payhauler regular "pick-up truck" spotting ease. The "big-target" Payhauler body speeds the shovel's dip-and-dump cycle.

Load-matched and road-matched turbo-charged diesel power gives these heavy-duty, off-highway haulers super-fast get-aways. Next-to-automatic Payhauler control gives safe, capacity-adding speed—even over rough terrain! The "65" can roll at 36.4 mph; the "95" at 38 mph!

And the double-acting hydraulic hoist, *under full controlled power both up and down*, contributes cycle-speeding 10-to-12-second Payhauler dumping!...Extra speed on every job-phase adds up to extra profit-tons hauled!

See how a Payhauler on your job will give you a decisive, profit-margin of difference! See your International Construction Equipment Distributor for a demonstration!

Find out for yourself *all about* all the big-money-making Payhauler features. Send for your free copy of this new, fully-illustrated Payhauler catalog!

International Harvester Co.
180 N. Michigan, Chicago 1, Ill.

Gentlemen:

☐ I am a contractor. ☐ Am interested in becoming a contractor. ☐ Am an equipment operator (please check square that applies.) Send me Payhauler Catalog (CR-603-G)

Name_____

Street Address_____

City_____ State_____

INTERNATIONAL® CONSTRUCTION EQUIPMENT

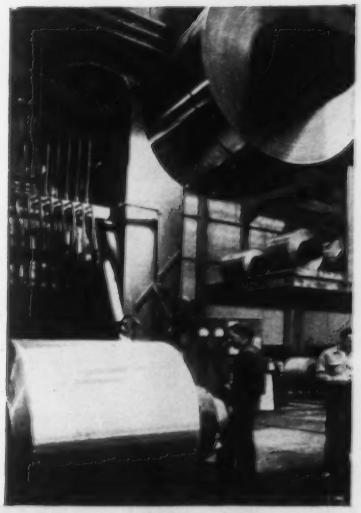
International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors ... Self-Propelled Scrapers ... Crawler and Rubber-Tired Loaders ... Off-Highway Haulers ... Diesel and Carbureted Engines ... Motor Trucks .. Farm Tractors and Equipment.

Olin Aluminum

pig...ingot...billet...flat sheet...
coiled sheet...fin stock...plate...
extrusions...solid...hollow...
semi-hollow...pipe and tubing...
rod and bar...electrical conductor...

is ready to Serve



Now Olin Aluminum offers you the advantages of a large scale, integrated producer... a dependable source for your growing need for fine aluminum. Call your nearest Olin Aluminum office for sales and engineering service. Or write: Aluminum Division, Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, N. Y.

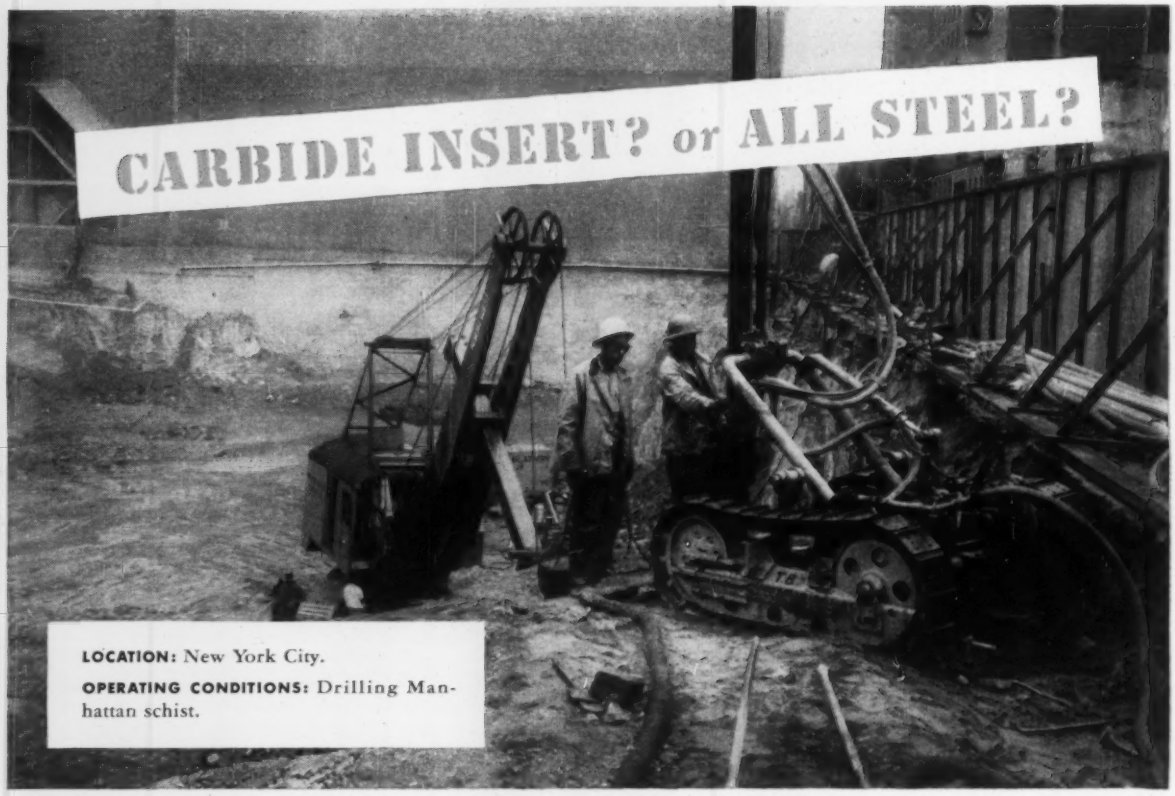
Atlanta ..... TRinity 2-5824	Kansas City ... PLaza 3-2055
Baltimore ..... VAlley 3-1426	Los Angeles .. DUnkirk 5-3231
Boston ..... VOlunteer 2-2148	Memphis ..... JAckson 7-2571
Chicago ..... ORchard 4-6886	Miami ..... PLaza 7-0635
Cincinnati .... CApitol 1-6030	Milwaukee .. BRoadway 3-8266
Cleveland ... SUperior 1-4964	Minneapolis.....UNion 9-9289
Dallas ..... FLeetwood 7-1591	New Haven .... SPruce 7-1491
Dayton ..... BAldwin 4-9631	New York ..... PLaza 1-4540
Detroit ..... Liberty 9-5500	Philadelphia .. MOhawk 4-6100
Houston .... OVerland 2-3645	Pittsburgh ..... GRant 1-3855
Jackson, Mich. .. STate 2-4900	St. Louis ... PArkview 6-0247
Syracuse ..... Gibson 6-0427	

℞ AND "OLIN ALUMINUM" ARE TRADEMARKS

OLIN MATHIESON CHEMICAL CORPORATION

OLIN ALUMINUM

Symbol of Quality and Service in the Aluminum Industry



"We get faster drilling with fewer bit changes using TIMKEN® carbide insert bits"

. . . Reports Slattery Contracting Co., Inc.

EXCAVATING for the new TIME-LIFE Building in New York City, Slattery Contracting Company, Inc., had to drill extremely deep, constant gage holes through hard, abrasive Manhattan schist. They held bit changes to a minimum, stepped up drilling speed and got lowest cost per foot-of-hole with Timken® threaded carbide insert bits.

For jobs like this you'll find that Timken carbide insert bits give maximum speed and economy.

Yet carbide insert bits aren't always best for every drilling job. In softer, less abrasive ground Timken all steel multi-use bits are your best bet. With correct and controlled reconditioning, they hold your cost per foot-of-hole to a minimum in ordinary ground when full increments of steel can be drilled.

Your drillers save time with either Timken carbide insert bits or all steel multi-use. Both are interchangeable in the same thread series, and dozens of different bits fit the same drill steel. Bits can be changed easily and quickly—right on the job!

All Timken rock bits are made from our own fine alloy, electric furnace steel. And to protect their threads against drilling impacts, Timken bits have a specially developed shoulder union.

So why not get all these advantages on your next drilling job? To make sure you get the type of Timken bit that meets your particular needs, just call or write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded all steel multi-use rock bit

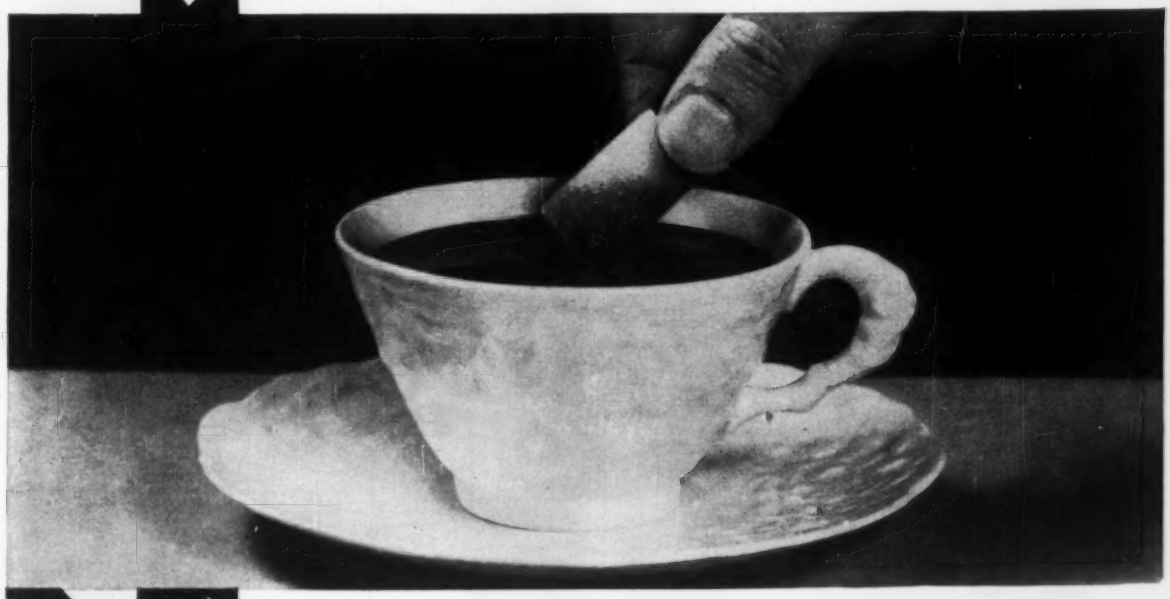
Timken threaded carbide insert rock bit

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit for every job

Penetrates through rust
like coffee soaks into a sugar cube!



How much do you spend on removing rust before you paint? Why not coat right over the sound rusted metal with Rust-Oleum 769 Damp-Proof Red Primer after simple scraping and wire-brushing to remove rust scale and loose rust . . . saving time, money, and metal! Rust-Oleum's specially-processed fish oil vehicle penetrates* through rust to bare metal—while the surface film remains *tough, firm,* and *durable.* You cut costly surface preparations, you receive nearly 30% greater coverage depending upon the condition and porosity of the surface—and you receive the *maximum* in over-the-years protection!

Whatever your color choice may be—Rust-Oleum finish coatings include the color you want. They're manufactured under the same *exclusive* formulation as the Rust-Oleum Primer . . . they assure you of *greater* compatibility, *double* protection, and *lasting* beauty! The best way to see what Rust-Oleum will do for you is to actually try it yourself . . . around your plant or home.

See our complete catalog in Sweets, or send the coupon for a free Rust-Oleum Test Sample . . . one brushful means *more* than a thousand words. Prompt delivery from Industrial Distributor stocks.

*As proved by Battelle Memorial Institute Technologists in radioactive tracing studies.

RUST-OLEUM®

Distinctive as your own fingerprint. Accept no substitute.

STOPS RUST!®

ATTACH TO YOUR LETTERHEAD FOR FREE TEST SAMPLE!

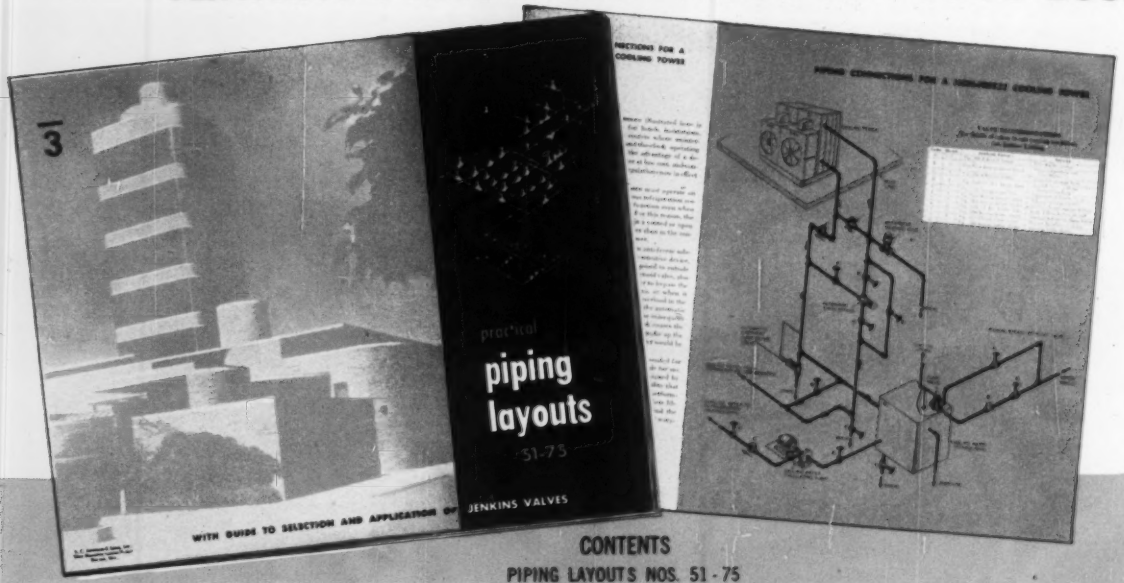
RUST-OLEUM CORPORATION
2552 Oakton Street
Evanston, Illinois

- ☐ Free test sample with complete literature
- ☐ 30-page report on Rust-Oleum penetration
- ☐ Nearest source of supply

AVAILABLE NOW! no. 3

in the famous series of

JENKINS PRACTICAL PIPING LAYOUTS *Books*



CONTENTS

PIPING LAYOUTS NOS. 51 - 75

No.	PIPING LAYOUT
51	Storage and Vaporizer Hookup for Liquefied Petroleum Gas.
52	Package Boiler Connections
53	District Steam Building Connections
54	Steam Desuperheater Piping Connections
55	Dry Cleaning Solvent Distillation Piping Connections
56	Automatic Combustion Controls
57	Connections for Typical Meters
58	Piping Connections for Steam Turbine Driven Centrifugal Refrigeration Compressor
59	Absorption Refrigeration Piping for Air Conditioning System
60	Single Coil All-Year Air Conditioning System
61	Cooling Water System for Refrigeration Compressors
62	Zeolite (Base Exchange) Water Softening System
63	Piping Connections for a Diesel Engine Lubrication Oil Purification System
64	Piping for Plumbing and Heating in a Small Taxpayer Building
65	Piping Connections for an Industrial Plant Air Compressor
66	Piping Connections for an Air-Washer Air Conditioning System
67	Continuous Cold Lime-Soda Ash Water Softening System
68	High Pressure—High Temperature Hot Water Piping System
69	Steam Jet Refrigeration System
70	Industrial Waste Treatment System
71	Piping Connections for a Non-Freeze Cooling Tower
72	Sulfate Pulping Process System
73	Piping for Acid Liquor Preparation in the Sulfate Pulping Process
74	Sulfate Pulping Liquor Recovery System
75	Piping Connections for Space Heating with Refrigeration Condenser Hot Water Discharge

PLUS 10 PAGES OF VALVE SPECIFICATIONS

Volume 3 is a 36-page collection of 25 basic piping diagrams with complete recommendations for valve selection and location in the lines. The material has been prepared by registered consulting engineers in collaboration with the Jenkins Bros. engineering staff and leading equipment manufacturers. It supplements the two booklets released by Jenkins Bros. in past years as a service to consulting engineers, architects, contractors, specification writers and plant operation managers.

In addition to the piping diagrams, this book contains a ten-page, illustrated quick-reference specification "chart" which gives essential data on the complete line of Jenkins Valves.

JENKINS

LOOK FOR THE JENKINS DIAMOND

VALVES

JENKINS SINCE 1864 Jenkins Bros.

Sold Through Leading Distributors Everywhere

For your copy, *please request Volume 3, Jenkins Practical Piping Layouts on your letterhead. Write to* JENKINS BROS., *Room 33, 100 Park Ave., New York 17.*

ENGINEERING NEWS-RECORD

Vol. 160, No. 10 March 6, 1958

Number of copies printed this issue, 82,056

CONTENTS

NATIONAL AFFAIRS

Consultants Want More Supervision Work..... 25
Civil Engineers See New Fields to Conquer.... 28
ACI Sets New Standards..... 30
AEC Ponders Peacetime Use of A-Bomb..... 31
Flood Tops Kariba Cofferdam..... 31
Falsework Failure Dumps Bridge..... 32
Walter Weiskopf Dies..... 32
Engineering News-Pictures 40

FEATURES

Problems of Engineers in Federal Jobs..... 42
Flood Control System Nurses Runoff..... 47
Colors and Numbers Help Steer Cars to Planes.. 50
Welded Steel Trusses Span Three-Use Building.. 57
Moving a Hangar Saved Time, Money..... 62
Prestressed Bridge Girders Span 151 ft..... 68

INTERNATIONAL

Power Dams on the Gentle Danube..... 73
Canadian Superhighway Proceeds on Schedule 74
Lima Plans Jet-Age Airport..... 74
Bid Deadline Set for Buenos Aires Subway.... 76
Argentine Road Work to Cost $83 Million.... 76

NEW PRODUCTS

Batch Plant Handles Two Mixes at Once..... 81
New Process Makes Harder Drill Steels..... 81
Hydraulic Grapple Fork for Truck Crane..... 82
Machine Offers Grooving, Joint Cleaning..... 82
Tilting Platform Trailers Add Strength, Capacity 82
Dozer With Teeth Doubles as Ripper..... 84
Lightweight Rock Bodies Now on Market..... 86
Portable Power Hammer Is Lightweight, Powerful 88

MEN AND JOBS

CEA of California Elects Harold King..... 99
Donald Stephens Appointed to IJC..... 99
Admiral Jelley Starts Colorado Practice..... 99
State Creates Urban Highway Division..... 99

BUSINESS AND FINANCE

Housing Boom Seen After 1965..... 133
February Contracts Rise a Second Time..... 136
Construction, Building Costs Stay Steady..... 138
New Engineering Center Planned..... 138
Contractor Wins Use Tax Controversy..... 138
Steel Firms to Cut Capital Spending in '58.... 138

LABOR

Closed Shop Practices Curbed..... 141
Jobless Conference Called for March..... 141
Proposal for Eliminating No-Man's Land Criticized 142
Stiff Penalties Sought for Boycott..... 143
Building Trades Support Tax Revision..... 143
Wage Demands Skirt Recession..... 144
Electronic Training Urged for Electricians..... 144
Area Conferences on Apprentice Training..... 145

Reader Comment ... 11 Books 106
Calendar ..... 12 Unit Prices 112
Washington Observer 23 Materials Prices 113
Legal ..... 91 Construction Reports 114
Obituaries ..... 102 Scoreboard 131
Editorials 156

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

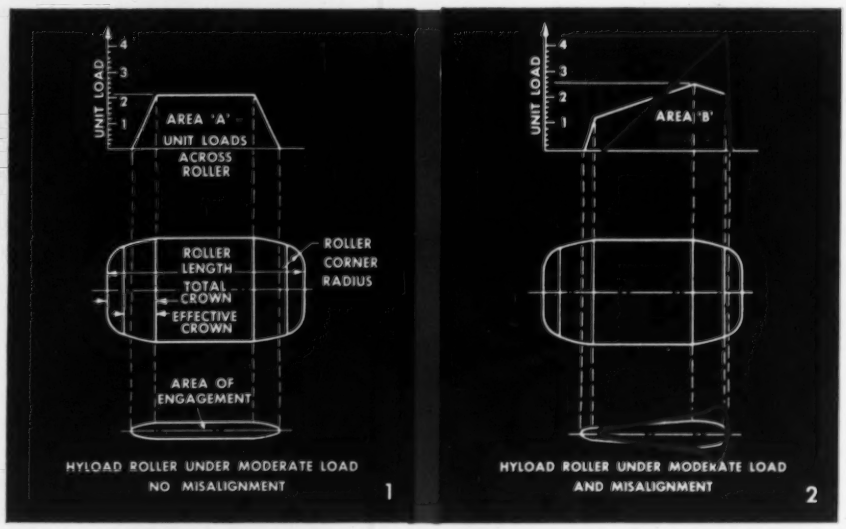
'58 FLOODS START—First of this year's floods in the U.S. hit late February in Northern California. Estimated damage, mostly to highways and bridges, ran into the millions of dollars. Shasta Dam on the upper Sacramento River and levee system downstream were credited with preventing greater damage. Elsewhere in the world, flood waters breached the cofferdam for 400 ft high Kariba arch dam (see page 31).

INTERSTATE ROAD REPORT—Speaking at the ASCE meeting in Chicago last week (see page 28) G. M. Williams, Assistant Commissioner for Engineering, Bureau of Public Roads, revealed some interesting vital statistics of the federal highway program: The interstate system will total exactly 38,548 mi. Of this, 4,568 mi will be in urban areas; 33,980 mi will be in rural regions. In rural areas alone, there will be 220 bridges over 1,000 ft in length; 6,765 bridges under 1,000 ft long. There will be 8,763 interchanges, 9,546 highway separations, 1,452 railroad separations and 405 highway-railroad separations. There will also be 20 tunnels over 500 ft long.

A-POWER COST BREAKTHROUGH—A nuclear power plant that is competitive with conventional thermal power in Northern California has been contracted for. The Pacific Gas & Electric Co. was awarded a $20 million contract to Bechtel Corp., San Francisco, to construct a 60,000 kw nuclear unit on Humboldt Bay near Eureka. Based on experience with the 5,000 kw PG&E-General Electric A-power plant at Vallecitos, Calif., unit power costs at the new facility are projected at a little over 8 mills per kwh. This is competitive with conventional thermal rate in the Eureka area because of high fuel oil costs and the ability of the nulear plant to be operated at high (90%) load factor. PG&E noted that a planned 200,000 kw nuclear plant in the San Francisco area would not be built until costs can be lowered to the 6.5 mills of the company's Pittsburg steam plant.

UNIONS OFFER PROGRAM TO CONGRESS—With an estimated 2,400 delegates in attendance, the AFL-CIO Building and Construction Trades Department opened a highly organized four-day legislative conference in Washington on Monday to protect and promote the interests of union construction workers as well as to bolster the nation's sagging economy. Delegates, keyed up by mounting unemployment and conscious of current anti-union sentiment, are spending two days on Capitol Hill to put before senators and congressmen a seven-point legislative program to: Spark housing, school and hospital construction; improve unemployment compensation benefits; amend the Taft-Hartley Act as it applies to pre-hire contracts, apprenticeship contributions, secondary boycotts, right-to-work laws and injunctions; extend minimum wage protection; and improve the prevailing wage law.

Why you're smart to specify HYATTS for replacement:

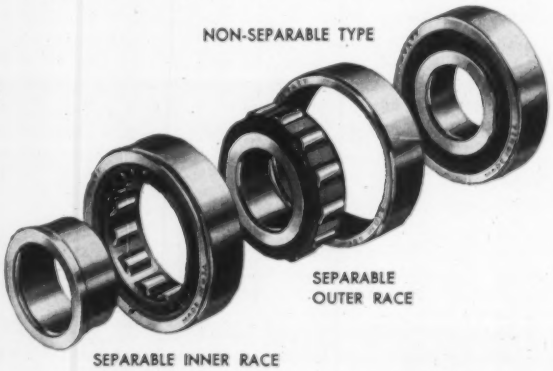


HY-LOAD ROLLER CROWNING MINIMIZES EFFECTS OF MISALIGNMENT—LENGTHENS BEARING LIFE

In any roller bearing, the design and quality of the rollers themselves vitally affect the performance of the entire bearing. The distribution of the load across the roller's full area of contact must be carefully controlled. End-loading and conditions of misalignment can seriously reduce the life of a roller bearing. How HYATT minimizes these effects is detailed at the right.

Be sure you get genuine HYATT Hy-Roll Bearings from your industrial bearings distributor. Then you're sure of the *lowest bearing cost per hour of service!* Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

The unit load on any roller is distributed axially in a uniform manner except at the ends where crowning has been provided. Figure 1 shows how the unit load drops off to zero at the ends of the area of contact. The summation of unit loads represented by area "A" is the total roller load. This same load under conditions of misalignment (Figure 2) must result in an area "B" equal to area "A"; but the maximum unit load is considerably greater and the misaligned bearing will therefore have a shorter life. However, if the same total load is applied to an uncrowned roller in a misaligned bearing, as shown in red, a much higher maximum unit load (area "C") results, and would reduce the life of the bearing. This demonstrates why HYATT Hy-Load Series Bearings with roller crowning run smoother and longer even under conditions of misalignment.



SEE YOUR INDUSTRIAL BEARINGS DISTRIBUTOR

GM PARTS SALES

1908–1958 GM FORWARD FROM FIFTY

HYATT HY-ROLL BEARINGS FOR REPLACEMENT

WASHINGTON OBSERVER

- White House lifts lid on civil works
- Engineers get green light on new starts
- Key committee tells agencies to seek more funds
- New ballistic missile bases planned

● **The White House has finally lifted the lid on civil works spending and new starts of the Corps of Engineers.** This means that the Budget Bureau is acting on President Eisenhower's decision that became known at last week's press conference.

The last vestige of budget-cutting has finally been wiped out. Now, spending for the year ending June 30 will be allowed to come up to the estimated $525 million originally programmed. Last week, the Budget Bureau gave permission to the Engineers to spend an additional $40 million out of this year's funds which had been held up as part of last year's budget balancing drive.

This brings the Engineers' construction funds for the current year up to the $600 million or so that they would have had if there had been no economy drive a year ago.

—

● **In addition, the White House has told the Corps to go ahead with 38 new starts** for which Congress voted money last year. Latest estimate on total cost of these: $850 million. Biggest project involved: the $350 million John Day Dam on the Columbia.

Army Engineers hope to have contracts on all 38 projects before July 1. In some cases, the prime contract will be awarded; in others it will be only a small token award, perhaps an access road.

As of the first of the week, however, the Bureau of Reclamation had not gotten permission to go ahead on new starts still banned under budget cutting. Last week, though, the House voted an additional $20 million for reclamation projects—the Trinity River diversion and power project in Northern California, and the Glen Canyon Dam of the Upper Colorado Project. At the same time, the House told Reclamation to start the Navaho Dam—another Upper Colorado project—and one of the starts held up by the White House economy drive.

—

● **Democrats in Congress want still more construction spending.** Appropriations Committee Chairman Clarence Cannon has told public works agencies that their budgets for next year aren't large enough. Congressman Cannon called off hearings scheduled for this week for the Bureau of Reclamation. He told officials there was no use holding the hearing, since the budget proposals before his public works subcommittee show no new starts and no stepped up spending on projects under way.

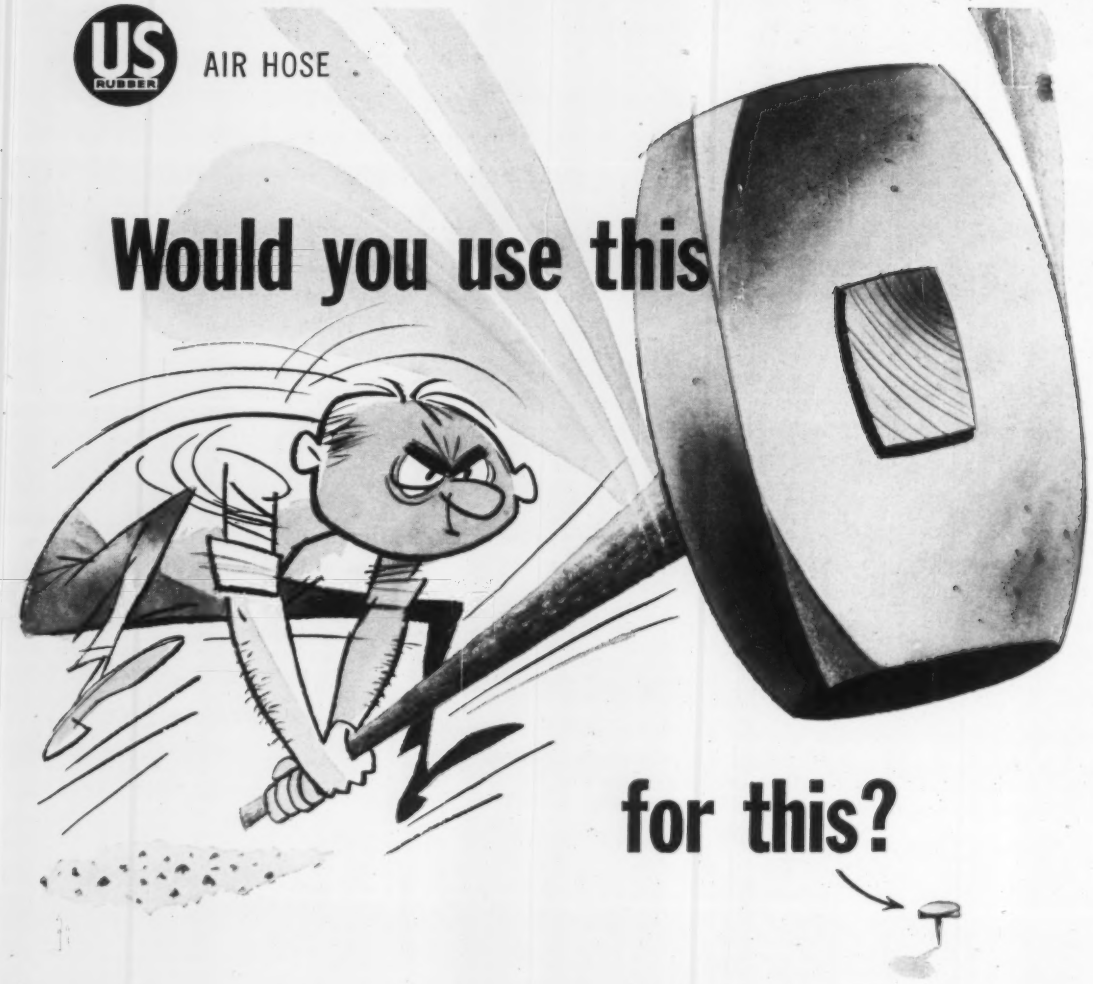
Both Reclamation and Army Engineers were told to prepare new requests for hearings to be re-scheduled later on. In the meantime, Chairman Cannon has, in effect, invited congressmen to submit to the committee public works spending proposals of their own.

—

● **Several more ballistic missile launching bases will be built.** The Air Force is surveying existing installations for sites which can be modernized for missiles. Two sites already picked are Cooke AFB in California and Francis E. Warren AFB in Wyoming (ENR Feb. 27, p. 21). Additional sites may be picked in time for building starts this year.

US RUBBER AIR HOSE

Would you use this



for this?

Then why pay extra for heavyweight, muscle-bound air hose, when U. S. Rubber Air Hose is easier to handle, more flexible, and withstands higher working pressures... at lower end cost.

When you're on a tight budget and a tight schedule, there's no sense in throwing dollars away buying overweight, hard-to-handle air hose. Such hose—with excessive, unnecessary plies—is out of date, will slow you down, and leave you out of pocket.

Now, thanks to "U. S." engineering, you get the optimum balance in air hose—easier to handle *and* at the same time tougher and less expensive. What's more, U. S. Air Hose handles higher working pressures than the conventional air hose you might be using.

Every hose in the complete "U. S." line is designed to give maximum service, even under unreasonable demands. Take advantage of the skill and long experience of "U. S." Hose technicians, plus "U. S." research and production facilities. Get U. S. Air Hose at your local authorized "U. S." Hose Distributor, or write us at Rockefeller Center, New York 20, New York. In Canada: Dominion Rubber Co., Ltd.

US RUBBER

Mechanical Goods Division

United States Rubber

See things you never saw before. Visit U. S. Rubber's New Exhibit Hall, Rockefeller Center, N.Y.

ENR editors asked these consulting engineering firms . . .

. . . How much supervision of construction do you do? Do you want more? What are your fees? Is the work profitable?

Abbott, Merkt & Co.
Albright & Friel, Inc.
Alvord, Burdick & Howson
Ammann & Whitney
Michael Jr., Baker, Inc.
S. B. Barnes & Associates
Harland Bartholomew & Associates
Black & Veatch
John A. Blume & Associates
H. J. Brunnier
Buck & Buck
Consoer, Townsend & Associates
Coverdale & Colpitts
Daniel, Mann, Johnson & Mendenhall
DeLeuw, Cather & Co.
Edwards & Kelcey
Fay, Spofford & Thorndike, Inc.
Forrest & Cotton
Frankland & Lienhard
Gannett Fleming Corddry & Carpenter
Gibbs & Hill, Inc.
Goodkind & O'Dea
John J. Gould & H. J. Degenkolb
Graham & Hayes
J. E. Greiner, Co.
Frederick R. Harris, Inc.
Hillman & Nowell
W. R. Holway & Associates
Horner & Shifrin
Howard, Needles, Tammen & Bergendoff
King & Gavaris
Leeds, Hill & Jewett
Lockwood, Andrews & Newman
Chas. T. Main, Inc.
Albert C. Martin & Associates
Metcalf & Eddy
Moran, Proctor, Mueser & Rutledge
Palmer & Baker Engineers, Inc.
Parsons, Brinkerhoff, Hall & MacDonald
Porter, Urquhart, McCreary & O'Brien
Rader & Associates
Richardson, Gordon & Associates
Singstad & Baillie
Stanley Engineering Co.
Stevens & Thompson
Sverdrup & Parcel, Inc.
Tudor Engineering Co.
Whitman, Requardt & Associates

© Engineering News Record

Construction supervision:

Consultants Look for More of It

Consulting firms, these days, put their forces into field supervision of construction in great number.

Just how great this activity has become is obvious for the first time this week as a result of a study by ENR of some 50 consulting firms, large and small, contacted across the U.S. (All those named above, plus another few who requested anonymity.)

Principal findings of this study, documented by figures and the frankest kind of comments, include these:

- Consulting engineering firms are rather firmly established in the supervision of construction projects they design.
- However, most of them—particularly highway engineering firms—want more of this business than they are now getting.
- Less than one firm out of four finds its construction supervision activity in a decline today.
- And in spite of a questionable profit picture—blamed generally on the basis for establishing fees—a clear majority of consultants see an obligation to seek authority over construction for which they have assumed design responsibility.

A prime object of this ENR study of the field services provided by consulting firms was to establish whether this facet of private practice dropped off severely after the spurt of contracts for tollroad engineering in the early Fifties.

A prime finding of the survey was unquestionably the eagerness of most consultants to comment in detail on their current interest in construction supervision. General concern over this element of their professional services was very obvious, and many of the verbatim answers to ENR questioning are presented here (next page) as a major result of this study.

• The firms contacted—The consultants contacted have organizations ranging in size from five employees to over 1,000. Among the firms reached there were a dozen employing under 50; 17 employing 51 to 250; 10 with from 251 to 500; and five having over 500.

The volumes of construction supervised in 1957 by the firms who disclosed figures (firms varied in specialties as well as in size) can be grouped this way: 13 each supervised less than $10 million worth of construction; 15 were in the $11 million to $25 million range; nine hit between $26 million and $55 million; and four supervised over $100 million worth of construction.

The attempt was made in this ENR survey of consultants to contact those who do buildings, water resource projects and sanitary engineering as well as highway and bridge work. And the figures gathered—as well as the comments—have particular interest when viewed in the light of types of work done by each firm.

For instance, it is apparent that most of the firms doing structural and sanitary work are getting to supervise construction for 50% to 100% of all the projects now on their drawing boards. Not so with the highway designers. A

. . . Supervision

dozen firms specializing in highway work will not get to supervise construction on more than 10% of the work they are designing right now.

• **Plight of the highway designers**—It's easy to pick off the big tollroad engineers from information they gave ENR on the better, bygone years they have known in field supervision. Many a consulting firm prospered on the fees of the turnpike authorities. Those agencies, created to finance and furnish the roads that people would pay to use, hadn't engineering forces capable of either design or construction supervision, for the most part, and private firms thus benefited. At least a dozen firms that need not be named now say their peak year in construction supervision was in the 1950-55 period, during which they obviously were big in the tollroad engineering picture.

Now, the highway consultant's honeymoon is over. Practically every firm wants more business—design as well as supervision—yet the Federal Highway Act with its multi-billion-dollar interstate program is proving no bonanza. Among the reasons: The state highway departments recently have regained their position in the manpower race; and the Bureau of Public Roads, holding the federal-aid purse strings, seems happy to see the states handle their own engineering as far as possible.

There was many an eloquent plea heard by ENR in its contacts among consultants who claim they can beat the engineering costs of state highway departments—and claim they have figures to prove it.

Outside the highway field there are many firms regularly supervising construction of nearly all the work they design. Some find it a satisfactory, profitable service. Others do it (or would do it) at a loss if necessary, so convinced are they of the need for and desirability of follow-through on design.

• **The degree, and the fee**—It becomes obvious that construction supervision can mean different things to different people. Consultation and advice during construction is the minimum amount of supervisory activity; this is covered in the basic engineering fee as set forth in the "Manual of Professional Practice for Civil Engineers" (ASCE—No. 29). Next comes resident supervision, which some consultants will perform even though the owner says he will handle it (Alvord, Burdick & Howson, for one, will provide this service whether or not it is paid for). Finally, there is the detailed field supervision—inspection. And there may be other services such as stake-out, materials approval or testing that may or may not be assigned to the consultant during construction.

The fees charged vary just as do these degrees of supervision. The firm that says its fee for field services ranges from 5% to 6% of construction costs (in the building field, incidentally) is obviously doing a lot more for its client than the firm that pegs its fee at 1% to 2%. In fact, the 1% to 2% is explained as "exclusive of amounts for

Consultants Are Frank and Free With Their Comments

Do you seek construction supervision?

● We are expected to assume the professional liability and responsibility, legally and financially. We should have the right as well as the obligation to insist upon being given the privilege of resident inspection and supervision over the construction, not only in the interest and protection of our client, but also in the interest of our own protection -- Michael Baker, Jr., Inc.

● Our firm is able and willing to supervise construction with appropriate fees. We don't want this type of business at a loss... As a general rule we would prefer to make the designs and let somebody else take the losses on supervision -- Edwards and Kelcey

● We are insisting more and more on private work that we provide at least general supervision of projects which we design. In both the public and the professionali interest, we would as a professional policy, insist on general supervision unless the owner has a permanent engineering staff of equivalent adequacy and competance -- Lockwood, Andrews & Newman.

● All major projects for which the consulting engineer has done the survey design, contract plans and specifications, should be constructed under the supervision of the consulting engineer. This enables the engineer to see that the plans prepared by the designer are completed as conceived and provides a desirable correlation of field and office problems for future improvement in design and construction -- Richardson, Gordon and Associates

Do you get it?

● It is impractical to assume that the designer has an obligation to supervise construction as not all clients will agree. The designer does have an obligation to produce plans that are adequate, even if he does not supervise -- Tudor Engineering Co.

● Much of our supervision of construction has been on tollroads which are now on the way out and which are being replaced by the federal highway program. To date it appears to be the intent of all state highway departments to handle supervision of construction on the federal highway program and very little supervision of construction will be handled by this firm unless this changes -- DeLeuw, Cather & Co.

To what degree?

● There is a mixup in semantics between supervision and inspection--both are needed... No matter how much detail you show on the drawings there is always some "expert" who wants to change things... A lot of "inspectors" are not competent--some are wonderful -- John A. Blume and Associates.

resident inspection and construction staking, which are paid for separately."

Perhaps the normal fee for detailed field supervision by consultants is in the 2.5% to 4.5% range. At least, that's what fees revealed by the consultants contacted by ENR would indicate.

Almost every consultant who expresses his fee as a percent of construction costs has also an alternative method of figuring charges: Percentage of the design fee (15-25%); or costs plus a fee; or flat daily, weekly or monthly charges per man.

• **Profit and loss statements**—There is a consultant who'll say construction supervision is an unprofitable venture for every two who'll say it pays. One individual goes so far as to pinpoint the profit area: On jobs running $5 million or more (construction cost) a 3.1% fee is a losing percentage; 4.0% might be all right, he says.

All agree that supervision at "payroll-plus" yields a small assured profit. And all will point out the inherent faults of the percentage-of-construction-cost fee: The lower the successful bid, the cheaper the contractor will want to do the job and the more close, costly supervision he may need, they say. And, of course, any stretch-out in construction time can kill possible profit in supervision if it has not been figured in the fee.

• **Big business**—It is obvious that the amount of supervision of construction a consulting firm does depends on how adequate an engineering organization its client has. As one consultant has put it, speaking of highway work, "Until recent years consulting engineers were rarely, if ever, engaged in the supervision of construction." State highway departments had adequate engineering organizations, and it took the turnpike authorities to put highway consultants heavily into field engineering. But it should be pointed out that other consultants—on sanitary engineering, dams, buildings and power plants—had been supervising construction to a considerable degree long before the tollroad era.

Interestingly, the biggest construction supervisor among U.S. consultants today is not a highway engineering firm, despite the tollroad work. Nor is it a firm that has copped some big federal A-E contract. (Fact is, architect-engineer contracts on federal work don't generally include supervision of construction.)

The figures revealed to ENR in this study confirm what might not be generally appreciated. In 1957, Chas. T. Main, Inc., of Boston had 225 of its 1,000 employees supervising $345 million worth of construction, according to the firm's president, W. M. Hall. This is the firm, working through the partnership Uhl, Hall & Rich, that has done design and supervision of the St. Lawrence Power Project, and now has started work on the Niagara job for the Power Authority of the State of New York.

EDITOR'S NOTE: For more information collected in this survey of consulting engineering firms, see *Business and Finance*, p. 133.

• We consider it desirable to provide construction supervision and inspection on work we have designed. The performance of "general supervision" only, leaving detailed inspection to forces furnished by the client is usually troublesome, expensive and unsatisfactory -- Gannett Fleming Corddry & Carpenter.

Why is it desirable?

• In many cases, additional costs can result from field decisions made without benefit of knowledge available to the designers. While common practice provides for consultation by the designer during construction this service is not always asked for and improper decisions sometimes result -- J.E. Greiner Co.

• Consulting firms should supervise their own design, preferabley entirely. On only two of our projects have we had serious difficulty. In both cases, the supervision was done by others with a complete disregard of our specifications -- Porter, Urquhart, McCreary & O'Brien.

• Designs are based on assumptions. Some of these can be verified during construction, others never can ... Modification of designs may be required for safety or economy or both... It is highly desirable in most cases, therefore, for the designer to have authority over construction -- Stanley Engineering Company

• In the field of foundations we see more and more cases of difficulty and distress resulting from the design engineer not having, or not being permitted to have, authority over field supervision of construction of the work he has designed... It is a definite function and responsibility of the design engineer to have authority over the supervision of the construction of his designs in the field -- Moran, Proctor, Mueser & Rutledge

• Engineering service is not good nor complete without supervisory control by the consulting engineer. The design drawings are somewhat useless unless properly interpreted and followed -- Hillman & Nowell

Does it pay?

• The existing basis for establishing fees is not equitable. Unlike design, the control of the supervision schedule is not in the consultant's hands. Delays from weather, strikes, material shortages, etc., pyramid supervision costs. This service might better be provided at cost plus a fixed fee -- Goodkind & O'Dea

• On any of our power jobs, which are large ones, the power companies have engineering talent entirely capable of supervising construction. We maintain... general supervision, included in the fee for design... We have always insisted on placing experienced men on the job... In many cases we lose money... an expense worthwhile as we feel that our own interest calls for having supervision -- Black & Veatch

Civil Engineers See New, Complex Fields

ASCE hears about nuclear power, urban transport, electronic computers and high-strength bolts

The constantly broadening field of interest and responsibility of the civil engineer was strongly emphasized at the convention of the American Society of Civil Engineers in Chicago last week. Among 38 separate sessions, several were concerned with subjects unheard of a few years ago, while others focused on aspects of more familiar subjects born of the complexities of modern growth and development.

Nuclear power plants and electronic computation are in the first class; urban transport problems and the science of high-strength bolted joints in the second. In nearly a hundred other papers, problems and projects encompassing every division of the field were presented and discussed.

A registration of over 1,000 was reported for the ASCE convention, and since the American Concrete Institute (p. 30) and the recently formed National Concrete Contractors Association were meeting at the same time in different hotels, Chicago was host to something in the neighborhood of 2,000 engineers. The ASCE and the ACI held one joint session and, in addition, teamed up to sponsor the larger social activities.

• **Society affairs**—The ASCE Board of Direction met for two days prior to the convention, but with one important exception concerned itself with internal society matters. The exception was the formulation of a program for securing financial support from the members for the $10 million Engineering Center to be built on United Nations Plaza in New York City. ASCE members, as individuals, have been assigned a sum of $800,000 as their share of the huge enterprise, and the campaign for contributions to this fund will be conducted from the local section level this spring. Members will be asked to make their pledges in full at that time, but payments can be spread over a three year period.

Some progress was made by the board in advancing such important projects as the new classification of members, the manual on fees, a supplement to the Code of Ethics on principles of professional practice, and the joint ASCE-AGC Guide to Bidding Procedure on Engineering Construction. But no final disposition of these matters was possible; their study continues by the committee concerned.

• **Electronic computers**—From the amount of interest shown in electronic computers on display at the five-day conference, there is little doubt that they are replacing the engineer's slide rule to a considerable degree.

Four manufacturers of such equipment participated in the exhibit, conducting all manner of computations of interest to the civil engineer. Their computers solved knotty problems of earthwork cut-and-fill, grade profiles, curves, spirals, and traverse closures. In structural designs, they solved intricate problems of superelevation of bridges on curves, and quickly analyzed such components as composite stringers, continuous girders, trusses, piers and pile groups.

An encouraging report on progress being made in the adoption of electronic computation methods in highway engineering was presented by H. A. Radzikowski, Bureau of Public Roads. Although this progress has been almost fantastic to date, he said, there is much to be done before we can obtain the ultimate value of this new tool.

He warned the civil engineers that they must work together with the equipment manufacturers and electronic computation service centers, to help develop the necessary procedures. The engineer must learn what the electronic computer can do for him, what data must be provided and what results he can expect.

Since a little over two years ago when the use of electronic computation was applied to highway engineering, 28 state highway departments have installed computers and at least 12 others plan on doing so. At least 20 highway engineering consultants have installed electronic computers, while a number of consultants as well as highway departments use computer services available at commercial computer centers and universities, said Mr. Radzikowski.

• **Urban transportation**—The mounting problem of moving people within large metropolitan areas was recognized by a joint session of the Highway and City Planning Divisions. And the dilemma was pointed up by D. Grant Mickle of the Automotive Safety Foundation in a committee report which stated these opposing ideas: Increase public mass transport facilities or continue to expand highway facilities, the latter on the ground that only in this way can many widespread areas be served since mass transport requires mass origins and destinations which are no longer available. The mass transport proponents respond with the argument that expressways are overloaded to inefficiency as soon as they are completed, that they require too much land for rights-of-way and that they require an impossible amount of terminal parking facilities.

The committee concludes that a major program of basic research is required to determine: If public transport can be self-supporting; if it requires a subsidy and from whom; if tracked mass transport can be combined in the same right-of-way with expressways; and what effect any or all of the possible solutions will have on land values.

In support of the research idea, as applied to a particular city, R. L. Creighton, of the Chicago Area Transportation Study, told how this organization is carrying out an investigation leading to a comprehensive long-time program for this metropolitan region. To be completed this year after three years and a cost of $2.3 million, the study is characterized as "comprehensive transportation planning" as distinct from mere traffic engineering studies or special studies of particular types of transport. He likened comprehensive transportation planning to the similar type of water planning in which (1) demand is calculated, (2) supply is calculated, (3) a collection and storage system is designed, (4) a distribution system is designed and (5) costs are estimated. When the Chicago study is completed, it is hoped that a pattern will be available to program progressive construction of all needed traffic facilities of whatever type is required to serve the area as it develops.

As an aid in solving the central city traffic snarl another paper recommended the elimination of the gridiron layout of blocks and replacement with large areas not traversed by through traffic arteries. The recommendation came from Charles A. Blessing, director of city planning in Detroit, who foresees such areas with interior circulation reserved for pedestrians only and parking facilities on the periphery.

• **Bolts and rivets**—New design applications involving structural materials have focused increased attention on both riveted and bolted joints. As evidence of this widespread interest, two entire sessions of ASCE's Struc-

to Conquer

tural Division were devoted to riveted and bolted connections.

Chief subjects under discussion were research studies on the strength of rivets and bolts in tension; structural behavior of beam-to-column connections; fatigue of metals; and practical problems of fabricating and erecting bolted assemblies.

Over the past 10 years, according to E. J. Ruble—research structural engineer of the Association of American Railroads and chairman of one of the sessions—a number of other research studies have been sponsored at various universities by the Research Council on Riveted and Bolted Joints. Three such projects now under way, he said, include: A study of nuts having different degrees of hardness to reduce stripping of the threads, at the University of Illinois; a study of basic principles of washer design, at Northwestern University; and a study of large bolted splices, at Lehigh University.

Significant conclusions of the research papers at the sessions disclosed that for tension-type connections bolted members carried about 14% more load than riveted members and that the load carrying efficiency of either rivets or bolts decreased the farther they were located from the centerline of the connection.

Tests on beam-to-column connections showed that riveted and bolted assemblies of equal design will resist about the same amount of moment-rotation. And double-lap joints in direct tension members are stronger in fatigue when made with high-strength bolts than those made with carbon steel or manganese steel rivets.

. . . Such as A-Plant Design and Construction

Civil engineering aspects of two of the nation's several nuclear power plants (now under construction by larger public utility companies) were subjects of papers in the Chicago convention's Power Division session. These were the Fermi Station of the Detroit Edison Co. and the Dresden Station of Chicago's Commonwealth Edison Co. (picture above).

The Fermi Station, being located on swampy land on the shore of Lake Erie, posed foundation as well as radioactive protection problems. In addition, the fact that the heat produced during the fission process is carried from the reactor to the indeterminate heat exchanger by liquid sodium made it necessary to protect all concrete surfaces from this destructive substance.

To prepare the site about 100,000 cu yd of muck have been excavated and replaced with 500,000 cu yd of clay fill covering a building area of about four acres. All structures are to be on rock or on piles to rock, which is about 30 ft below the surface. Studies have indicated that the entire site will have to be enclosed in some kind of a seawall to protect the plant from flooding and to isolate the lake from any escaping radioactive wastes. Protection must also be provided against the possibility that runoff from rains might carry wastes into the lake. The facility will have "holdup" basins into which all storm drains will discharge.

The building housing the reactor is being designed to resist shock waves and flying missiles that might result from an instantaneous energy release. It is a 72 ft dia welded steel cylinder 120 ft high designed in accordance with the boiler and pressure vessel code. Below ground, where the reactor is located, the building is enclosed in concrete 3 ft thick. Were this portion above ground the concrete thickness would have to be 7 ft. Concrete is also placed inside the base of the steel cylinder to anchor it and to make a base for the reactor.

A concrete shield wall also is required around the reactor itself inside the main outside wall. Because of the use of sodium, this concrete—as well as that in a sodium storage building and in a tunnel from this building to the reactor building—has to be protected by steel plates ½ in. thick. They serve as the forms for the concrete. All joints in such concrete are required to be broken in two directions so as to bar all paths for the escape of gamma rays. Walls and roofs are generally 6 ft thick.

The Dresden Station, located 50 mi southwest of Chicago, is notable as being the largest all-nuclear plant now under way in the country. Of 180,000 kw capacity, its reactor is of the boiling water type in contrast to that at the Fermi Station, which is of the liquid metal cooled, fast neutron breeder type.

This difference in reactor types is reflected in differences in construction requirements. The Dresden building is a steel sphere 190 ft in diameter entirely above ground. Most of the construction work at Dresden is complete, and the project is in the equipment installation stage.

In another paper related to nuclear power plants, the insurance requirements of such facilities were reviewed. It was reported that the insurance industry has now pooled its knowledge and resources in three special syndicates which will write nuclear energy coverages. The insurance available per risk ranges from $25 million to $60 million. Additional insurance is also available for a fee from the federal government under a 1957 amendment to the Atomic Energy Act.

W. H. Weiskopf Dies

Structural consultant planned noted buildings

Walter H. Weiskopf, 59, prominent consulting structural engineer, died January 26 in New York. A partner in Weiskopf and Pickworth, New York City, he participated in the design of numerous well known buildings.

Recent structures for which Mr. Weiskopf was a consultant include the 52 story Union Carbide Building and the 60 story Chase Manhattan Bank Building now under construction in New York City; Lever House; the new U. S Senate Office Building; Manufacturers Trust Co. bank in New York City, and the Ford Motor Co. staff office building in Dearborn, Mich.

His firm's far-flung operations included preparation of plans for the Equitable Trust Co. Building in New York City; the Mitsui Bank main building in Tokyo; the Gulf Oil Co. Building in Pittsburgh; the Hayden Planetarium and the Daily News Building, both in New York City.

Mr. Weiskopf spent nine years in the design departments of the U. S. Steel and Carnegie Steel companies before joining Weiskopf and Pickworth, in which his father was a partner. During World War II, Mr. Weiskopf served as head engineer of the New York District Corps of Engineers of the Army. He was a 1920 civil engineering graduate of Rensselaer Polytechnic Institute.

ACI Sets New Standards

Concrete engineers also consider upgrading highway design requirements at annual meeting in Chicago

Now is the time to be thinking of design and construction requirements of concrete highway and airfield pavements to carry traffic loads of 1980 and beyond—what experimental work is needed now and what construction techniques should be developed to accomplish this goal. These were among the chief subjects of discussion at the 54th annual meeting of the American Concrete Institute in Chicago last week, which had a total registration of about 750.

During the four-day meeting, speakers took a searching look at current concrete design procedures and construction techniques, and four new ACI standards were adopted. Also joint sessions were held with the American Society of Civil Engineers.

• **Roads of the future**—Thinking ahead on roads—one question of top concern to many engineers is: "Will the pavement we design today be adequate 20 years hence?"

A complete session was devoted to previewing highways of the future based on present design requirements, construction practices, and experimental work now going on with concrete pavement. Speakers emphasized that highway engineers should be thinking of present design requirements in terms of 1980, since that is the latest target date for completion of the interstate system.

It is quite likely, according to some observers, that some of the experimental work now in progress will form the basis for the pavements of tomorrow. For example, indications are that there will be a definite increase in the number of continuously reinforced concrete pavements constructed, and that prestressed concrete will prove feasible for pavement slabs.

• **Heavier loads feared**—One development that the concrete pavement designers object to strenuously is the continuing increase in permissible axle loads for commercial vehicles. At the present time they range from 18,000 lb to 22,400 lb per axle. The designers fear that the tendency to increase these axle loads in certain areas will continue. They point out that special permits for operation of heavy hauling equipment are increasing each year, with axle loads as high as 35,000 lb on multiple-wheel axles becoming common. The frequency of axle load applications, a major factor in pavement design, is also increasing in proportion to the increase in traffic.

Designers are pretty well agreed on the width of pavement. In view of the trends in modern transport, the trend is toward a minimum width of pavement of 24 ft, regardless of traffic conditions or cost, on major highways. Although the transition from 12 ft lanes on these high-speed expressways to 11 ft lanes on other systems creates a driving hazard, the extra foot per lane adds materially to the structural strength of the pavement and thus increases its economic life.

Consensus of the session was that paved shoulders have a definite beneficial effect on pavement performance. In the long run, these paved shoulders should pay for themselves by extending the structural life of the slab. At the same time they reduce maintenance cost and provide greater safety and convenience for the highway user.

• **New standards**—Four new recommended practices for the concrete industry were adopted by the convention. (Ratification by letter ballot by the general membership of ACI is required for official adoption.) They cover recommended design practices for concrete pavement, for both airport and highway construction; specifications for such concrete pavements and their supporting bases; minimum requirements for precast concrete floor and roof units, replacing a 1953 ACI standard; and test procedures to determine relative bond value of reinforcing bars.

• **New shear formula**—Charles S. Whitney, Ammann & Whitney, consulting engineers, New York, proposed a new method for estimating the ultimate shear strength of reinforced concrete members without shear reinforcement. Although it is radically different from that currently in use, he said it appears to be well supported by the results of tests that have covered a wide range of beam sizes and concrete and steel strengths. He pointed out that the conventional shear formula, $v = V/bjd$, is not suitable for use because shear strength is not a simple function of concrete strength, but depends largely on the amount of flexural reinforcement and its efficiency. Tests also show, he said, that because of bond failure due to splitting of concrete, the flexural reinforcement cannot be fully effective if it is too closely spaced.

ACI'S NEW PRESIDENT Douglas McHenry (right) takes over duties from Walter Price of the Bureau of Reclamation.

A paper, by J. R. Gaston and Eivind Hognestad, Structural Development Department, Portland Cement Association, Chicago, dealt with the development of precast concrete girders reinforced with high-strength deformed bars. Two scale-model roof girders were tested to develop an unsual type of precast concrete building frame.

The roof girders differ from customary practice primarily because of the slenderness of the T-shaped cross section and use of high-strength longitudinal tension reinforcement and inclined stirrups. Following the successful conclusion of the test, twenty 58 ft span girders were manufactured for two laboratory buildings being built at PCA's laboratory center in Skokie, Ill.

• **New officers**—Douglas McHenry, director of development, Portland Cement Association, Chicago, was elected president of ACI, succeeding Walter H. Price, head of the Engineering Laboratories, U.S. Bureau of Reclamation, Denver. Joseph W. Kelly, professor and vice chairman, department of civil engineering, University of California, was elected to a two-year term as vice president.

Four newly elected members of the institute's board of direction are: A. Amirikian, Bureau of Yards and Docks; Prof. S. J. Chamberlain, Iowa State College; Bryant Mather, Waterways Experiment Station, Corps of Engineers, Jackson, Miss.; and Cedric Willson, Texas Industries, Inc.

Honorary membership in the ACI was conferred on three engineers in recognition of outstanding service in the field of concrete or the work of the institute. They are: Eugene Freyssinet, Paris, France; Douglas E. Parsons, chief, Building Technology Division, National Bureau of Standards, Washington, D. C.; and Stanton Walker, director of engineering, National Sand and Gravel Association and National Ready Mixed Concrete Association, Washington, D. C.

A-Bomb Might Become Super-Excavator

AEC foresees construction role for nuclear explosions in mass movement of earth and minerals

The Atomic Energy Commission has high hopes that, in the not too distant future, it will be able to put the devastating force of atomic bombs to work for mankind—by making excavations for harbors or canals, breaking up underground formations for oil or mining companies, or even producing steam for use in the Antarctic.

Already-confirmed experience with a mountain-shaking shot made last September convinces top officials that a similar shot could be used almost any time to create a harbor or increase the flow of oil from tight formations underground.

The commission, since its creation at the end of World War II, has been forced by cold-war circumstances to concentrate on development and production of devices for death and destruction.

For several years, though, a few scientists and engineers have been intrigued by the thought that these devices designed to level a city could also be harnessed to move millions of tons of earth.

Now the idea is beginning to get out of the talking stage and the AEC wants industry to help in making the dream come true.

Last July, the AEC established "Project Plowshare" at the University of California's Radiation Laboratory at Livermore. The aim is to explore whether, and how, nuclear weapons can be used for peaceful purposes.

In September, the commission and the Pentagon cooperated in the first underground explosion of an atomic bomb at AEC's Nevada testing site.

This test, dubbed "Rainier" by the government, had a military purpose—to determine whether it was feasible to conduct some A-bomb tests underground, thus avoiding all the messy problems posed by atomic fallout.

It was not part of Project Plowshare, but the researchers at Livermore are reported to be learning some valuable lessons from this test.

AEC Commissioner Willard F. Libby, the most enthusiastic booster for Project Plowshare within the government, describes the test this way:

A horizontal tunnel, seven feet by six, was dug 2,000 ft into the side of a mesa. Deep within the mountain, the tunnel was curled into a spiral, and an atomic bomb placed at the very end. The object was to trap the blast as far as possible, instead of letting it shoot back out the tunnel.

The point at which the bomb was placed was 800 ft below the top of the mesa.

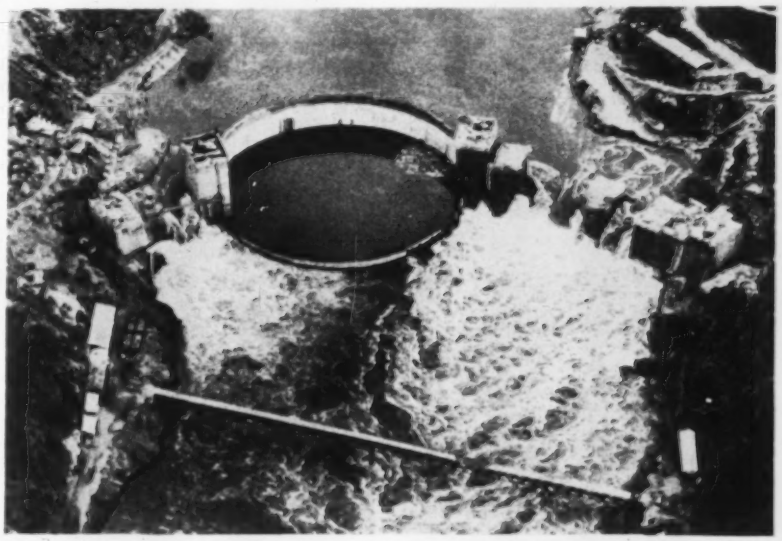
The bomb used had a power of 1.7 kilotons—that is, power equivalent to 1,700 tons of TNT. This bomb, relatively speaking, was a midget. Its power was only one-tenth that of the 20,000 tons-of-TNT bomb used at Hiroshima.

The shot came off without incident. The surface was not ruptured and scientists—intrigued by the thought of all that heat trapped somewhere in the earth—began digging a new tunnel to the blast site within the mountain.

The AEC is elated over what they found, says Mr. Libby.

When the bomb exploded, 400,000 tons of rock were crushed within a diameter of 130 ft. At the center, for a short time there was a bubble of vaporized rock 55 ft in diameter. However, the shell around this bubble was too thin to withstand the weight of the crushed rock on top; hence, it collapsed, with the crushed rock falling into and mixing with the material in the saucer-like portion of the bubble which was left.

(Continued on page 32)



RECORD FLOOD of Zambezi River in central Africa topped Kariba cofferdam by 6 ft a few days after photo was taken and swept away bridge in foreground.

Flood Tops Kariba Cofferdam

A Zambezi River flood estimated to be 50% greater than last year's record flood last week breached the cofferdam containing the foundation of 400 ft Kariba arch dam. The raging central African river, flowing at 60 ft per sec, swept away a $300,000 construction bridge across the river and tore away huge chunks of riverbank and numerous contractor buildings along the shore.

Work is virtually halted and now the only connection between river banks is a suspension foot bridge.

The cofferdam, a circular arch originaly constructed to pass safely the record flood of last year, was heightened by 12 ft in the days preceding this year's flood. But at last report, it was 6 ft under water. This report received early this week from ENR's correspondent in Rhodesia, also mentioned the distinct possibility that the cofferdam would be completely swept away. As it was, unofficial estimates by the Rhodesian Federal Government Hydro-Electric Board and the contractor, Impresit, Ltd., of Italy, placed damage at more than $1 million.

Designed by Andre Coyne as a thin arch of 400 ft maximum height, Kariba will span a 1,800 ft gorge and back up a reservoir of 140 million acre-ft, 4½ times the size of Lake Meade behind Hoover Dam (ENR Sept. 6, 1956, p 71). Zambezi River flow during rainy seasons has been estimated as 450,000 cfs. There was no information as to the magnitude of last week's flow.

. . . A-bomb to move earth

To the surprise of the investigators, says Mr. Libby, radioactivity was confined to 700 tons of radioactive rock at the center which could be easily identified because of its color—black.

The entire region of the 400,000 tons of crushed rock days after the explosion was still heated to a point 130 C above the normal rock temperature.

Mr. Libby says the Livermore researchers will have to make some blasts of their own (probably late this year) in order to make further findings.

The first shot, for example, was made in moist volcanic ash; the moisture was lost in the explosion. Future tests might well be carried out at a shallower depth, in a different type of rock and in formations where no moisture is present.

As it is, Mr. Libby sees six possible peacetime uses for underground nuclear explosions:

1. To move earth:

"We know how to dig out a harbor right now," says Mr. Libby. (Other AEC sources have said three prospective harbor sites already have been chosen). "But we are stymied for the present by the fallout problem."

AEC also envisions possible use of A-bombs to excavate for canals, or in changing the course of rivers.

2. To loosen underground formations:

Both oil and mining companies have held exploratory talks with AEC concerning possible use of nuclear bombs to break up underground formations, thereby making extraction of minerals easier.

3. To make natural steam which can be tapped for industrial use:

It may be possible to introduce water into the "hot" underground area, thus producing steam which then can be tapped for heating purposes or for generating electric power.

4. To study the internal structure of the earth:

The shocks produced by the explosions will be valuable to seismologists studying the internal structure of the earth, since the shock waves are sharp and clear compared to the fuzzy waves produced by earthquakes.

5. To produce radioisotopes:

They may be produced as byproducts of a blast set off primarily for another purpose.

6. To induce chemical reactions:

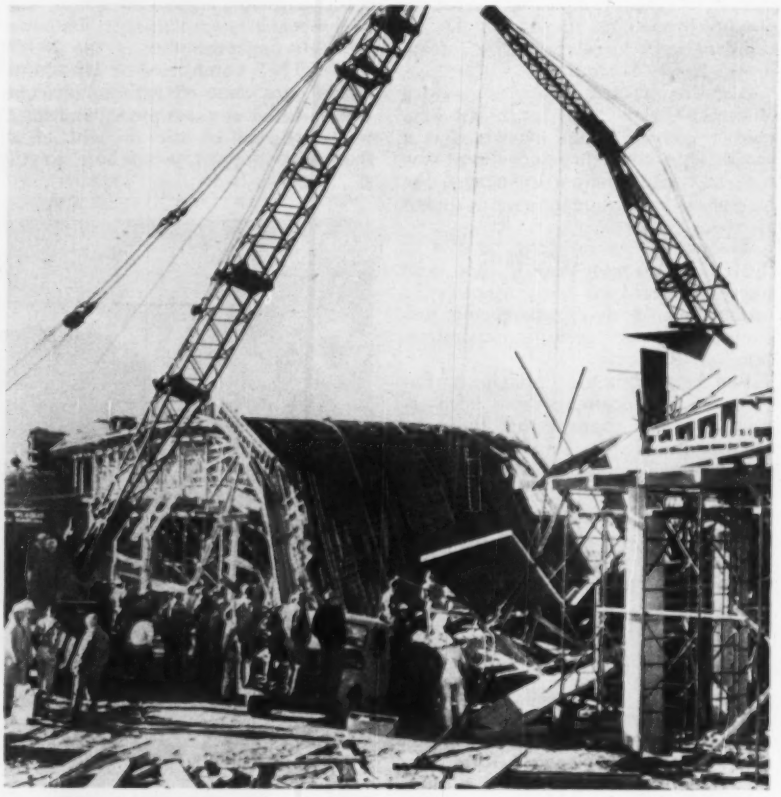
Mr. Libby thinks it would prove possible to gasify coal or shale, as well as produce a number of other chemical reactions—depending on the type of geological formation in which the blast is exploded.

Mr. Libby agrees that some of these uses may prove impractical. But he has full confidence that further research will uncover some practical uses for atomic explosives, and that advances may come rather rapidly.

"We welcome ideas from industry," he says. "We're trying to keep this thing unclassified, and we'd like nothing better than for some people to come in with well thought out proposals on tests for specific purposes."

The bombs, in the foreseeable future, must remain under the close control of the government. No one can buy an A-bomb from the government. But Mr. Libby promises the cooperation of the AEC to the maximum extent possible.

Mr. Libby is confident that at least one underground test shot will be made this year, probably in Nevada. (No underground tests will be made in the upcoming tests in the Pacific.)



Falsework Failure Dumps Bridge

Tubular steel falsework supporting the wood forms for a highway overpass north of Denver collapsed during concreting operations February 19 and dropped a 60 ft section 15 ft to the ground. Six workmen of 20 on the structure were injured.

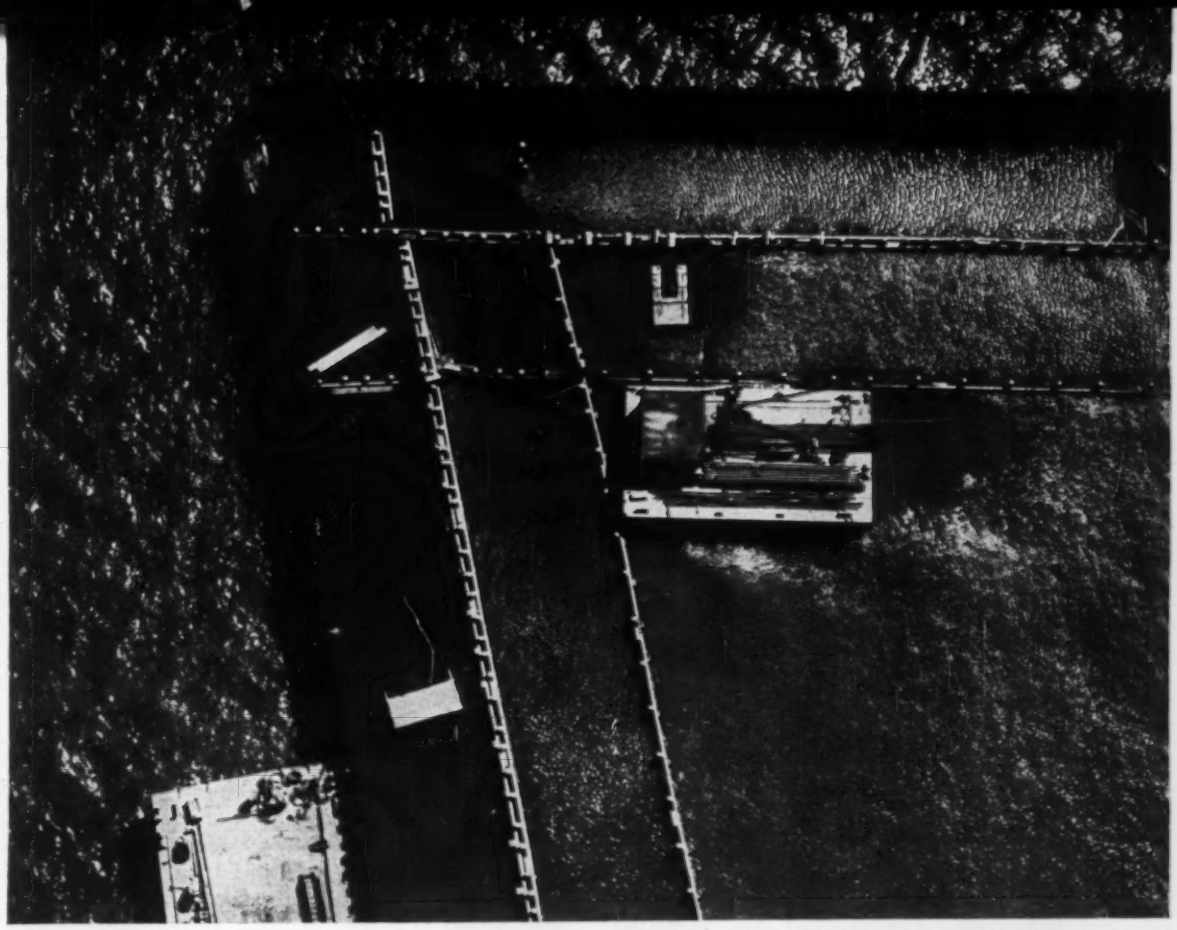
Investigations are being conducted by the Colorado Highway Department, the contractor and the scaffolding manufacturer.

The failure occurred an hour after concrete placement began. About 39 cu yd of a total of 100 cu yd scheduled for the ill-fated section had been placed, the job superintendent said. Total weight of the fallen section was estimated at 115 tons, including 79 tons of fresh concrete.

Frank Wiggs, structural superintendent for Peter Kiewit Sons Co., the contractor, said the supports were intended to have a safety factor of two. He attributed the collapse either to misplacement of the shoring or to defects in it. The pipe shoring had been newly purchased, he said. Mr. Wiggs estimated the damage at $40,000.

Martin Trotsky, president of Waco Scaffolding & Equipment Co., Denver, manufacturers of the steel falsework, said he would have no statement to make until Waco engineers complete a thorough investigation.

The structure was one of six bridges and overpasses being erected by the Kiewit firm under a $1.2 million contract with the state.

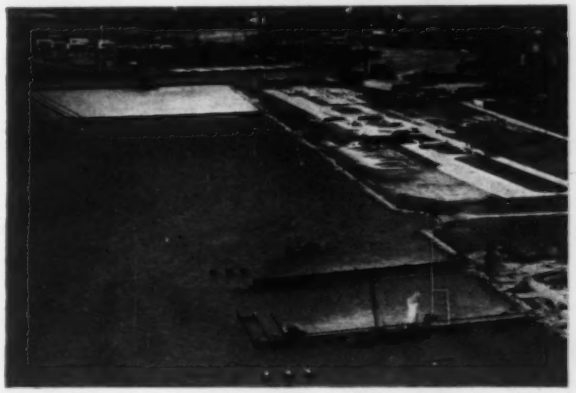


This interesting air view of the new passenger and automobile pier in Milwaukee's outer harbor shows Bethlehem steel sheet piling driven to hard strata in about 25-ft of water. Contractor was Great Lakes Dredge and Dock Co., Chicago.

Deep-Water Piers for Milwaukee

The Board of Harbor Commissioners of the City of Milwaukee is preparing for the 1959 opening of the St. Lawrence Seaway by expanding port facilities and services. Outer harbor channels will be deepened to the Seaway's 27-ft draft, a number of piers and cargo terminals are either planned or under construction, and improvements in railway and truck facilities directly to the outer harbor are being made.

Two of these important projects are illustrated here. First is a new outer-harbor passenger and automobile pier where Bethlehem steel sheet piling was driven to hard strata in about 25-ft of water. About 2800 ft south is the second project, the construction of bulkheads enclosing a reclaimed 20-acre tract. The latter project will provide 1900 ft of deep-draft berthing space and the reclaimed land eventually will be the site of both terminal and industrial facilities. Here, too, Bethlehem steel sheet piling was used to form the permanent walls of the bulkhead.



General view of two new Milwaukee outer harbor construction projects. In foreground is passenger and automobile pier under construction. Rear, the sheet piling bulkhead enclosing about 20 acres of reclaimed land. Contractor for this job: Edward E. Gillen Co., Milwaukee.

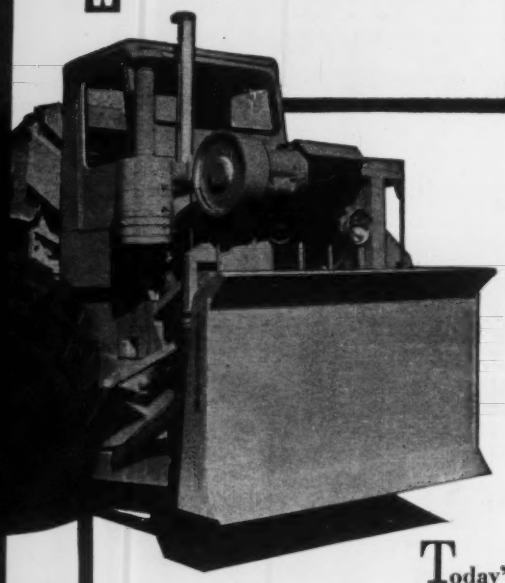
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Advertisement



Contractor Nick Pinello analyzes 420 hp pusher

Today's big-yardage contracts pose a new problem in earthmoving: how to push-load the big 18 to 27-yd. scrapers now becoming standard. The most common solution . . . using 2 crawlers in tandem . . . is far from satisfactory. Positioning is slow, complicated; power is lost as 3 machines and 3 operators try to synchronize; and the operating cost of the "extra" machine and operator is substantial.

Nick Pinello, Colorado Springs, is one of the big-yardage contractors who have found a much *better* answer; the LeTourneau-Westinghouse Twin-C*. This 40-ton pusher is actually 2 rubber-tired tractors *in one*. Its twin 210 hp engines are controlled with a common throttle, and joined thru a geared, kingpin yoke. Identical torque-converter constant-mesh transmissions match pusher speed to scraper speed.

Pinello has worked his Twin-C since early 1956—racking up over 2600 hours of service on a variety of projects, during all 4 seasons, in a wide range of materials. *How has this big 420 hp unit stood up? Has it done what it was intended to do? How does it compare to a pair of crawler tractors? How good is it?* Pinello here tells us, in his own words, his answers to such questions.

Here's how Nick Pinello feels about his 420 hp Twin-C after 14 months, 2600 hrs.

Q. *First of all, Mr. Pinello, on what type of job do you use your Twin-C pusher? Does the size of the project, for instance, determine whether you'll use it or not?*

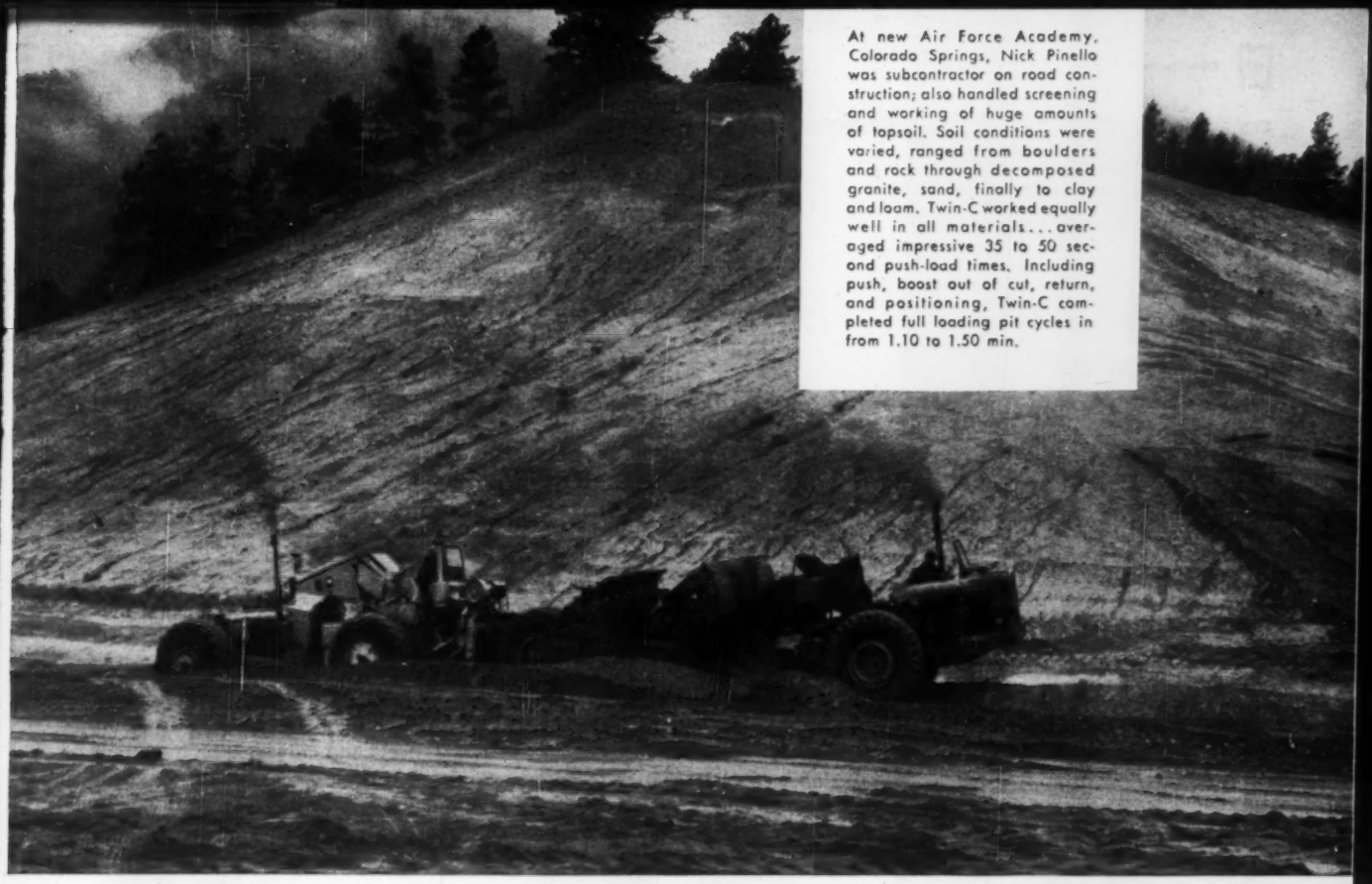
A. We've been using the Twin-C on just about every kind of job. And no, the size of the project doesn't matter too much. As far as yardage is concerned, I don't believe there's any job too small for it. If you can work any kind of Tournapull®, it's feasible to use the Twin-C. Remember, you can take a couple of scrapers and this pusher and run across town with them, right to the job . . . and the minute your scrapers are working, so's your pusher. There's no trucking expense for your pusher.

True, you have to have enough room to maneuver the Twin-C. I'd say the smallest pit you could use the Twin-C in would be about 200 feet. Usually I figure about 100 feet to load with the Twin-C.

Q. *What about the soil . . . the materials you'll work the Twin-C in?*

A. We have used the Twin-C in all kinds of soil. Rocky soil, for instance, doesn't give us much trouble. We've worked in boulders that cut our scraper bottoms and cutting edges and stopped our crawler tractors cold, yet the Twin-C stood up.

Some material, of course . . . like fine sand . . . is tough to load no matter what you've got pushing. It has no boil to it . . . it's just dead, and no crawler or any other type of machine can get big production in it.



At new Air Force Academy, Colorado Springs, Nick Pinello was subcontractor on road construction; also handled screening and working of huge amounts of topsoil. Soil conditions were varied, ranged from boulders and rock through decomposed granite, sand, finally to clay and loam. Twin-C worked equally well in all materials... averaged impressive 35 to 50 second push-load times. Including push, boost out of cut, return, and positioning, Twin-C completed full loading pit cycles in from 1.10 to 1.50 min.

Q. *Do you use the Twin-C only with your big scrapers?*

A. I use it with the 25-yard** B Tournapulls, sure... but I also use it with my 18-yard "C's". It does a good job with both, so why not use it with both?

Q. *What about weather, Mr. Pinello? Does that determine whether you'll use your Twin-C as against, say, tandemed crawlers?*

A. Well, I've never seen wetter weather than we've had this year ... yet we've been using the Twin-C continuously. Actually, you can use it in any weather conditions where you can use a crawler or any other piece of machinery. If the weather's good enough to move dirt at all, the Twin-C can work. In fact, I think the Twin-C will push in weather that'll stop a crawler.

**Current Model B Tournapulls have 27-yard Fullpak* scrapers, and load even more easily with the Twin-C.

Continued: Nick Pinello talks performance ... production ... comparisons ... next page

National construction magazines covered the story when Nick Pinello used big fleet of earth-moving machines to move 840,000 yds. for shopping center at Colorado Springs. Running the project with the precision of a clock, Nick finished 30 days ahead of schedule, without working his machines to capacity. Twin-C pushed two 25-yd. B Tournapulls on this job; 3-unit team moved 5,000 yds. a day, on one-way haul of 1,200'. Big scrapers were loaded in average of only 40 seconds.

*Trademark

"The thing to remember on timing," says Nick Pinello, "is to time *everything* . . . not just the loading. And put 'em on the scales . . . that's where the difference shows up."

When a gigantic flood all but destroyed the farm and ranch of the Pinello family on Memorial Day, 1935, the men of the family got to work in a hurry. In short order, they bought a dragline and bulldozer, pitched in to restore the land. The results were so good a neighboring landowner asked if they'd clean up *his* place. "That was the start of it," says Nick Pinello.

From there, the route to becoming one of the busiest earthmovers in his part of the country was a fast, uninterrupted trip. Today Nick has handled jobs like an 840,000-yard grading project for a shopping center at Colorado Springs . . . or roadwork at the big, new Air Force Academy in Colorado . . . with equal ease and efficiency.

Where equipment is concerned, he has either owned or is familiar with, every major tool available to the earthmover. He's worked with most of the old, and new, crawler-drawn L-W scrapers; began using self-propelled Tournapulls in 1953. No matter what equipment he's using, however, a good share of Nick's success can be attributed to his ability in management. He's a firm believer in time tables, precision-schedules, and *meeting* those schedules.

PINELLO STORY *(Continued)*

Q. *Is there anything different about the way you'll work your Twin-C, compared to a crawler, for instance . . . any special techniques or methods?*

A. No, sir. It's a big, fast, powerful pusher, and we use it that way. One noticeable difference from standard crawler-operation is that it's better for the Twin-C to back up than turn around after making a push. It can back up fast and then be right in position to make instant contact with the next machine. We usually try to plan on having one scraper pull into the pit and start making its cut at just about the same time the other scraper is picking up and leaving for the fill.

If you've got a big cut, of course, we can step-load. Here at the Air Force Academy, for instance, some of our cuts were a thousand feet long. So the Twin-C kept pushing scrapers, one after another . . . "stepped" along the length of the cut. When it got to the end of the cut it would turn around and come barreling back to start all over again.

As far as an operator is concerned, the best Twin-C operator is probably a man experienced on the Tournapull . . . because it, too, is a high-speed machine. Things move fast when you're pushing with a Twin-C, so he has to be quite alert . . . quick to make a decision.

We hydroflate our tires for extra weight on the machine. The Twin-C has plenty horsepower to handle this extra weight.

And one of the biggest differences, of course, between working this Twin-C and crawler-type tractors is that, to move the Twin-C from job to job, we just drive it down the highway. We haven't had any problems, by the way, getting permits to move the machine.

Q. *In general, Mr. Pinello, how has your Twin-C been performing for you?*

A. I'm more than satisfied with its performance. Average loading time, using it to push B Tournapulls (the 25-yarders), will run about 35 seconds. That's our average. Sometimes you can load them in 25, and other times, in loose material, it'll take 45 seconds.

In our cuts, by the way, the scraper operator is the boss. When he feels he has a load, he picks up and gets moving. My boys usually pick up and go when they have a nice, rounded load. They don't spend a lot of time trying to cram in an extra half yard.

Q. *Have you done any time-studies on pusher work?*

A. Yes, we've done quite a bit of comparing of cycle times between the Twin-C and crawlers. On one recent study here, on a 3,000-foot cycle, we found that the Twin-C was cutting a *whole minute* off the scraper cycle time — compared to the same scrapers push-loaded with a big crawler.

The surprising thing you know: of that minute saved, only about 20 seconds was saved in the actual loading. But the thing to remember, on timing, is to time *everything* — not just the loading.

What was happening on our cycles was that the Twin-C was *making contact* with the scraper a lot faster ... saving 10 to 15 seconds right there. And then, when the pushing was done, the Twin-C would follow the scraper up, and give it that *extra boost* to get it into 3rd or 4th gear and out of the pit. That added another big saving of time ... our figures showed this speed-up push, cut up to 20 seconds off each cycle. Add this to the *positioning* and *loading* savings, and there's your minute.

And anytime you can cut a minute off a cycle, I'm happy. On a couple of hundred cycles a day, those 100 minutes add up to a lot more pay-yards moved!

And speaking of pay-yards, we're convinced that with the Twin-C pushing, you not only load faster, but you get bigger loads, too. That's because the first 15 yards or so go in so fast that it's compacted. You're not only getting dirt in there, you're getting *compacted* dirt. That's a hard thing to see just looking at a scraper. But we ran tests ... put the scrapers over the scales ... and that's where it showed up. The loads would look identical — push-loaded by the crawler and loaded by the Twin-C. But when they went over the scales, the loads push-loaded with the Twin-C would be anywhere from 3,000 to 6,000 pounds heavier!

Says Pinello: "I've found it's faster maneuvering, gives more actual push, and, most important, you load more yards."

Q. *What about your scraper speed with the Twin-C pushing?*

A. The scraper operator has to work right along with the Twin-C when they're loading. He keeps "revved up" just about the same as when a crawler's doing the pushing. The big thing, though, is that, "revving up" like that, he's moving forward so much faster ... with no slippage on his tires ... which, incidentally, saves your scraper tires.

Our Twin-C uses about 10 gallons of fuel an hour ... while my big crawlers use about 8 gallons an hour. Considering that the Twin-C has two engines, that's not bad. And that fuel consumption is in really heavy pushing work.

Q. *Are there any basic disadvantages in pushing with the Twin-C instead of crawler-type tractors?*

A. I haven't found any disadvantages. The advantages are all with the Twin-C. I've found that it's faster maneuvering, gives more actual push, loads faster, and most important, you load more yards with the Twin-C.

Some of its features are really standouts. The floating push-block is fine, for instance. It makes it easy for the operator to follow the scraper on through. He just lines up the push-block, then goes. Visibility on the Twin-C is excellent. And the differential means you're always driving. What really pays off, though, is the instant shift. It lets you get into a higher gear fast, to help push the scraper out of the cut.

Continued: What about maintenance? ... Tires? ... Electrics? ... Attachments? ... See next page

SPECIFICATIONS (Twin-C Tractor)

OVERALL MEASUREMENTS

Length	28' 10"	Wheelbase	15'
Width	9' 9"	Gauge, center to center tires	7'3"
Height	11' 4"	Ground clearance	18"

TIRES
Standard ... 29.5-29, 22-ply rating, Traction

STEERING ... Positive power steer, electric control all wheels drive in turn
Maximum turning angle ... 60° left and right
Width required for 180° turn ... 43' 8"

BRAKES ... Multiple-disc air brakes on all four wheels
Square inches of braking surface ... 3,690
Automatic emergency braking system ... Standard
Parking brake ... Standard, mechanical

WEIGHTS
Shipping weight, approximate ... 80,400 lbs.

HORSEPOWER ... 420 HP

ENGINES ... Two, synchronized, General Motors 6-71
Maximum Brake HP of each ... 210 HP @ 2000 RPM
Number of cylinders in each ... 6
Operating cycle ... 2 cycle
Horsepower rated at ... 1500' altitude @ 90° F.
Maximum torque ... 575 lb. ft. @ 1500 RPM
Bore ... 4¼"
Stroke ... 5"
Displacement, each engine ... 425.6 cu. in.

Ea. engine w/transmission and torque converter drives 1 set of wheels.

TRANSMISSIONS ... Two Constant-Mesh-type LeTourneau-Westinghouse 7-C transmissions with two Tournaschneider torque converters

DIFFERENTIALS ... Each unit has power-transfer automatic friction type no-slip differential

DRIVE AXLES ... Heavy-duty stub axles mounted on anti-friction bearings

SPEEDS, in MPH @ 2000 RPM

1st	3.2	4th	20.0
2nd	5.8	Reverse 1st	3.2
3rd	10.9	Reverse 2nd	5.8

Speeds include 10% converter slip

PUSH-BLOCK
Height ... 4' 1½"
Width ... 7' 4"
Control ... electric motor control. Push-block "floats" after contact is made to follow ground irregularities

SERVICE CAPACITIES (U. S. Standard Measurement)

Cooling System	12 gals. each
Crankcase	5 gals. each
Fuel Tank	100 gals. each
Final Drive (Main Case)	26 gals. each
Transmission	14 gals. each
Torque Converter	13 gals. each

CABLE SPECIFICATIONS
Push-Block Hoist ... ⅜" x 32'
Type recommended: 6 x 19 Filler Wire, Preformed LeTourneau-Westinghouse wire rope, Improved Plow Steel, Right Lang Lay, I.W.R.C.

OPTIONAL ACCESSORIES
Cab, cab heater, lucite windshield, defroster, windshield wiper.

"The Pusher," says Contractor Pinello, "is the most important piece of equipment on your spread. Anytime your high-speed scrapers are waiting for a pusher, they're not carrying pay-yards . . . and you're not making money."

PINELLO STORY *(Continued)*

Here's what Operator Pete Cimino has to say:

"I've run other kinds of push tractors, and there's no two ways about it: the Twin-C's got more push. I can push a scraper out of the cut a lot faster. And it doesn't make much difference to me whether we're working in a long borrow pit or not. This rig is so maneuverable, I can get around wherever a scraper can. It's mighty easy to get behind any scraper.

"Electrical trouble? I've never had any at all.

"The Twin-C was easy to learn to operate. Yes, sir, I've been operating equipment since 1938 . . . and this is the best pusher I've ever seen or run."

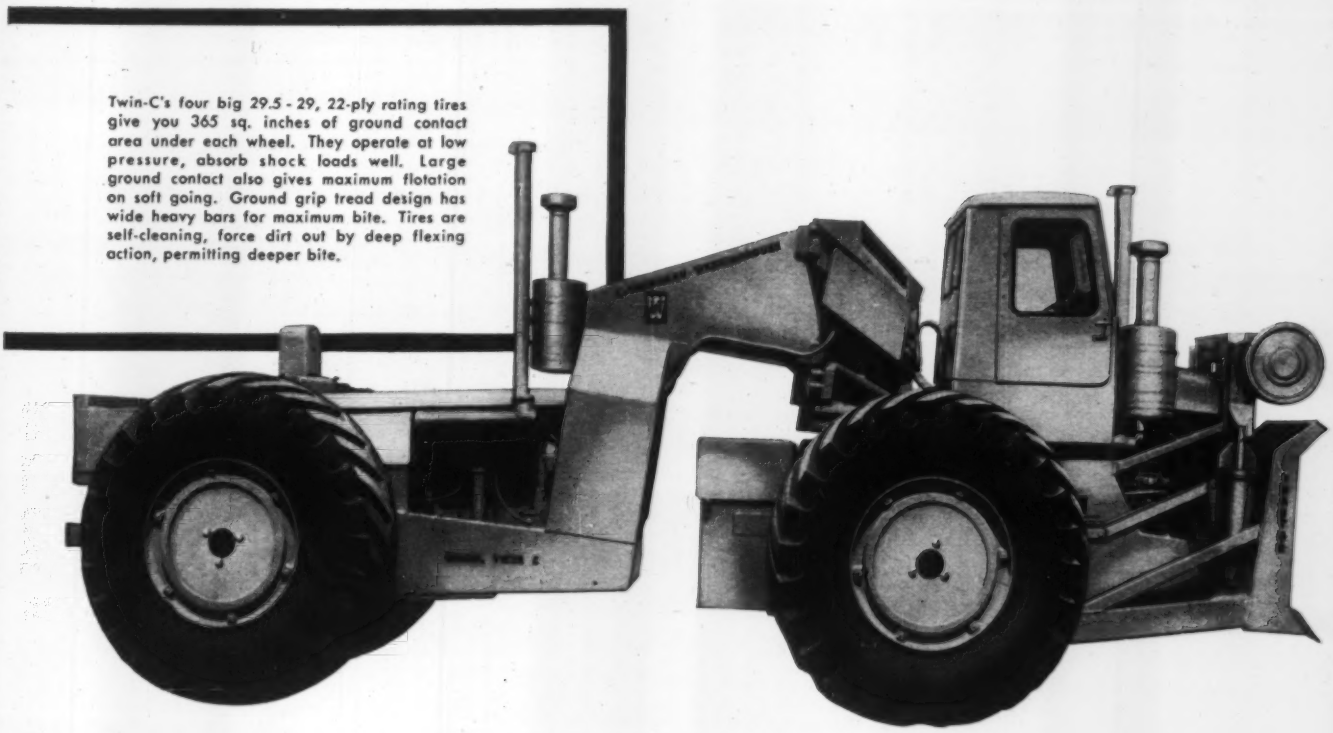
Q. *What about maintenance, Mr. Pinello? Had much trouble with Twin-C?*

A. Except for some trouble I've had with the pinion and bullgears . . . and remember, you get trouble with any machine that works so hard . . . we've had very little maintenance work. All in all, I think the Twin-C is more economical to run than a crawler tractor.

On a crawler pusher, for instance, I figure a set of tracks, rollers, sprockets and idlers will last about 3,000 hours. That's if the tractor's been doing mainly push-loading — just about the hardest work a tractor has to do. I can get new tires for my Twin-C for far less than a set of tracks. So, even if my tires went out at 3,000 hours . . . the same time, in other words, as a set of crawlers . . . there's several hundred dollars saved right there. And re-capping the tires would save even more.

The tires on my Twin-C, by the way, are still the originals, after 2600 hours, including work right through the winter. They're in good shape, with just a little smoothness starting to show on the front tires.

Speaking of tires, one of the big advantages of the Twin-C is that its tread matches the tread of the scrapers it's pushing. That's been one of my big complaints with these big crawler tractors . . . their track is about 6″ wider than the cut you've made with the scraper. As a result, one of the tracks . . . usually the right one, because the pusher operator looks over the left side of his ma-



Twin-C's four big 29.5 - 29, 22-ply rating tires give you 365 sq. inches of ground contact area under each wheel. They operate at low pressure, absorb shock loads well. Large ground contact also gives maximum flotation on soft going. Ground grip tread design has wide heavy bars for maximum bite. Tires are self-cleaning, force dirt out by deep flexing action, permitting deeper bite.

chine and keeps the left track level ... is riding half-on, half-off the ledge. Your rollers and sprockets and track will wear out on the right hand side twice as fast as on the left hand track. And this "pigeon-toed" tracking cuts down your ground contact for traction, too.

Q. *How about the Twin-C's electric power system? Any problem in maintenance there, Mr. Pinello?*

A. Not at all. The electric controls have given us very little trouble. My operators like the system — there's no reason in the world to dislike it. Once you get acquainted with it, trouble shooting's easy.

Every man checks his own machine before he puts it to work ... gives it a good going-over. It isn't necessary to check the connections, or anything like that. No, the only trouble we've had with the electrics is that a stator or armature will wear out. Or occasionally the control-box points will short out. But that's rare.

One big thing I like about electric controls is that you're either down, or working at 100% efficiency. It's not like a hydraulic unit, where you could limp along for six months at 75% efficiency.

Q. *Do you think the Twin-C should be fitted with attachments for dozing, or pulling?*

A. Certainly not. There's nothing wrong with being a pusher and nothing else. I think the pusher is the most important piece of equipment in your fleet. Any time your high-speed scrapers are in the pit waiting for a pusher, it means they're not carrying pay-yards, you know ... and you're not making money.

When that happens, there's no such thing as a pusher being too fast, too big, or too expensive. Believe me, I'd rather have a pusher waiting for a scraper, than the other way around. And the faster your pusher can get and keep those scrapers hustling, the more pay-yards you're moving. No, I want a pusher to push ... not for incidental work like ripping, or dozing, or anything else. When the scraper is ready to be pushed, I want that pusher ready, too.

The way I see it, the pusher is part of a team that does your loading. The better matched the pusher and scraper are, the better that team will perform. I think the rubber-tired pusher, in fact, will some day be just as accepted as rubber-tired scrapers are today. Other manufacturers will produce 'em, too. They have to. You've got to match those scraper speeds with pusher speed.

Q. *Mr. Pinello, you sound pleased with your Twin-C.*

A. I can't praise it too highly. I can truthfully say that I've been very, very happy with my Twin-C. It's been a good, dependable machine, and made money for me. I think it's the answer to a contractor's pusher problems.

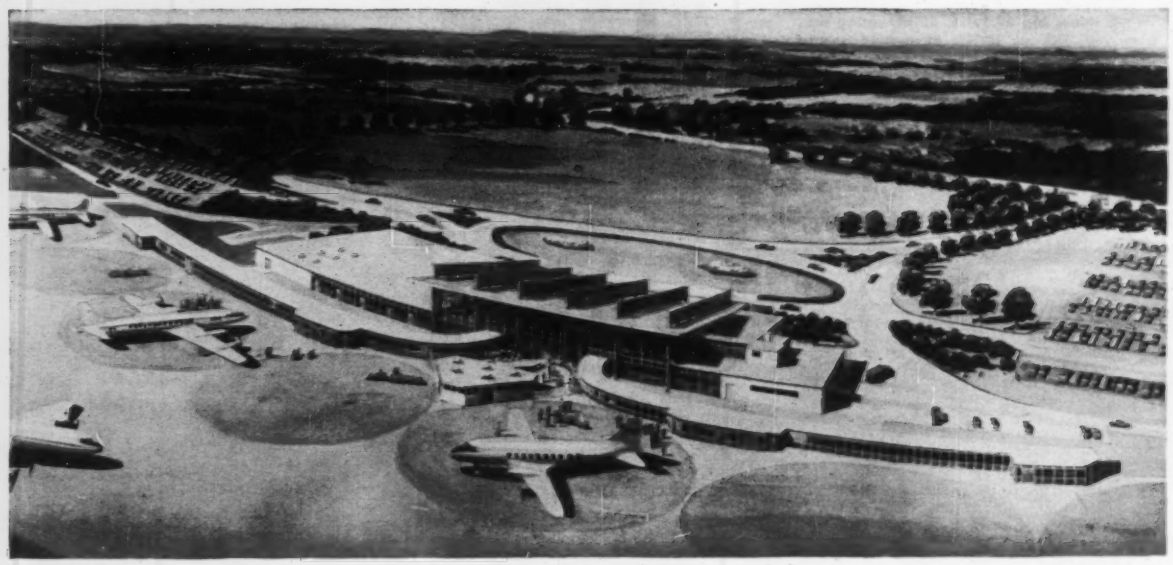
Your LeTourneau-Westinghouse Distributor has complete facts and all details on the 420 hp Twin-C rubber-tired pusher. Call him or write him.

TW-1625-DCJ-6

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



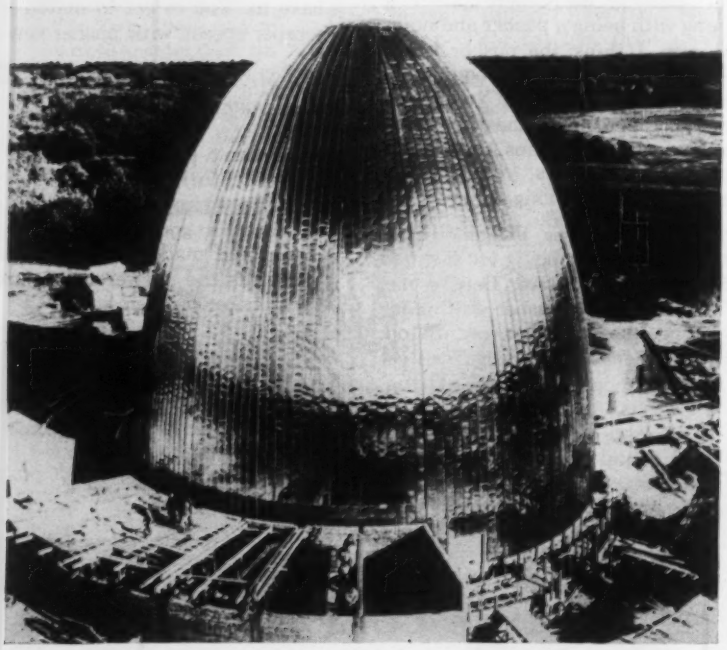
Air Terminal Frame Will Be Outdoors

Work on Rhode Island's new $2.2 million state air terminal is about to begin in Hillsgrove, R. I. Both the terminal and the airport are named after the state's senior U. S. Senator, Theodore Francis Green.

The center part of the building will be supported by an outside steel frame. The roof and mezzanine floor will hang from six 102 ft long, 7 ft deep welded plate girders that are designed to span the width of the structure in the open. Steel columns will be placed outside the walls but will be sheltered by broad roof overhangs.

The terminal will house six airlines and will have seven departure gates. Traffic is expected to reach an hourly peak of 250 passengers and 1,000 nonpassengers.

Chapman, Evans & Delehanty, New York City architects, designed the terminal. Nanni Building Co., Johnston, R. I., is the general contractor.



Shield for Peace Atoms

An aluminum-sheathed reactor enclosure 100 ft high in the German village of Garching marks the location of the University of Munich's newly completed nuclear research center. Incorporating a 1,000 kw pool-type reactor, the largest built in Europe under the Eisenhower Atoms-for-Peace program, the center will be used for student training, special studies and radioisotopes production. The AMF Atomics Division of American Machine & Foundry Co. built the reactor.

Now Being Occupied

Tenants are now moving into Cleveland's first major new office building to be erected in nearly 30 years, the glass-and-aluminum-enclosed 22 story Illuminating Bldg. The structure has a reinforced concrete frame, but most columns below the eighth floor and a few up to the tenth are composite type, with a 14 WF 426 core (ENR Sept. 19, 1957, p. 65). Office space totals 400,000 sq ft. Carson & Lundin are the architects, George A. Fuller Co., the contractors—both firms of New York City.

High Flying Construction

A 3,400 lb heating unit is spotted on a factory roof by a helicopter. The work is being done on a $40 million plant now under construction near San Diego, Cal. for Convair Astronautics. The contractor, McNeil Construction Co., of Los Angeles used the 'copter to lift and place 103 tons of heating and ventilating equipment on top of the building.

Problems of Professional Engineers in

EDITOR'S NOTE: The federal government has been reported as becoming increasingly aware of its problems in getting and keeping engineers and scientists (ENR Jan. 9, p 21). And its basic problem, of course, is pay. But there are other matters of personnel policy that could be improved. The author of this article —R. W. Johnson—advances several ideas, which if adopted, might save the government loss of some of its already short engineering manpower.

Mr. Johnson, 33 years of age, has been with the Corps of Engineers on and off since he was 19 years old. His first two years were overseas as an enlisted man in construction battalion duty. Then came college, ROTC, and return to the Corps for two years as an officer in an engineer division in Germany. Graduate work and a year in a consultant's office were followed by another return to the Corps and to Germany, this time as a civilian, a special projects engineer. He writes as a professional engineer in the federal service, concerned with the problems of this group. He also suggests some solutions.

R. W. Johnson
U. S. Army
Frankfurt, Germany

With the increasing attention that has been focused on the professional status of engineers, the engineer in federal service has been greatly neglected.

Professional recognition has been slow in developing for federally employed engineers, causing problems for the engineers involved and for the nation as a whole. By virtue of the extreme size of the federal establishment the individual engineer quickly loses his professional identity and is merely another employee.

One of the largest federal agencies employing engineers always has been the Corps of Engineers. Let's examine the Corps' problem of engineer utilization, recognizing the effect which lack of full professional status is producing on the individual engineers as well as the organization. The engineer is concerned because his professional identity and financial welfare are involved; and the government is concerned because the continuing demand for engineers is creating related problems in the retention of capable engineers.

The Civilian Personnel Office of the Department of the Army administers the personnel functions of the Corps. Between these two agencies exists a most unusual relationship, compared with typical private organizations. This relationship can be considered unlike civilian practice in that one office administers the personnel problems of the individual while another concerns itself with his job potential. While the vast majority of government employees are not affected by this relationship, studies show that the professional engineer loses recognition and consideration in his administration by the Civilian Personnel Office—and to some degree by the utilizing agency as well.

• **Each job is rated**—Engineers required to fill job vacancies are hired by application through the Civilian Personnel Office in their district. These vacancies are "jobs" which require certain skills, listed and detailed by job descriptions. The job description carries a certain grade and salary classification as well as certain basic education and experience requirements. The applicants are screened to determine which persons fill these requirements, i.e. qualify for the job, and from these the successful applicant is selected.

A significant point emerges: engineers are not themselves classified as GS-9, GS-11 or GS-12; the job is so classified, and the engineer merely is certified as qualifying for the particular job. Broad guide lines to the duties and grades of engineering jobs are established in the Civil Service Commission's "Handbook of Occupational Groups & Series of Classes."

Interpretation of this manual and the establishment of grades is the responsibility of a classification officer who normally is not an engineer. The classification branch of the personnel office is required by law to survey once a year all positions within the jurisdiction of that office. And herein stems a deficiency of the civil service system: the job may be re-classified without consent, or even knowledge, of the incumbent at such a time that his duties change due to re-organization or change in mission or function.

• **Demotion to sub-professional possible**—The employee has little recourse in this type of situation which can, under certain circumstances, force the career engineer to accept reclassification to a sub-professional grade. Periods of sub-professional status are not creditable time when considered for promotion in professional grades or for professional registration. The insecurity and impedence to professional development which this causes is readily understood.

• **Registration not required**—Among federal engineers themselves a lack of professionalism is accentuated by failure to require their registration. Registration is so important to professionalism that it hardly can be considered other than equal in value and worth to the engineering degree, yet few incentives or requirements exist to encouraged registration.

Although registration has been a recommendation of the National Society of Professional Engineers for some time, the Civil Service Commission has omitted incorporation of this requirement in the qualifications for engineering jobs of a high professional level. Failure to require registration of high-graded engineers has permitted the ranks of higher classifications to be "diluted" by numbers of professionally sub-developed engineers. NSPE recommends the registration of all engineers in the grade GS-13 and above. This recommendation could properly be extended to include GS-12 positions also.

Mention has been made of the infiltration of less capable and qualified engineers in the higher engineering grades. This trend has resulted primarily from the loss of senior career engineers to private industry, produced in part by the very conditions of salary and professional status described. In the present highly competitive demand for engineers and engineering services, prolonged failure of the federal government to provide a proper attitude toward professional engineers will probably result in many of these engineers being attracted to positions in private industry where proper recognition is given.

The attendant result may be that government agencies will have to relax qualifications further to qualify less capable engineers to the higher grades and offset the high attrition rate. This circle describes a reduction in engineering know-how and ability instead of an elevation in professional stature.

• **Technician grades needed**—One solution to this problem appears to be the establishment of a technician or engineering-aide classification, which would be clearly sub-professional in structure but which would provide the higher grades necessary to attract such personnel to careers in federal service. The professional engineer could then be classified, graded and salaried in accordance with the degree of responsibility and professional duties performed, which would make federal service more

Federal Jobs

attractive and prevent the prevalent turnover in engineering positions.

This policy has been adopted by various state agencies—particularly, several state highway departments.

That the Corps of Engineers is cognizant of this problem is demonstrated by the program developed at its Ft. Belvoir Research and Development Laboratories. Basic feature of this program is assignment of an administrative assistant to one or more engineers, his function to divest the engineer of a multitude of administrative details which do not contribute directly to the work required, and which do not require technical training or experience.

• **Non-professionals grade professionals**—Another fundamental civil service problem, referred to above, concerns the survey of engineering positions by individuals who lack professional background necessary to evaluate properly the degree and scope of the professional work involved.

This incidentally, is the policy for lawyers and medical doctors hired for positions within the federal government. It, too, is a recommendation of the Engineers Joint Council. Probably the most difficult problem encountered by federal service engineers is that caused by failure of agency heads to observe a professional attitude toward engineers employed. This problem is encountered most frequently in the construction agencies of the Corps.

In the Corps, the District and Division head is normally a military officer. His training is that gained through practice and experience where the individual is often overlooked in the overall pattern of getting the job done. Consequently the welfare of the engineer is given secondary consideration when it may conflict with management procedures or policies governing the agency's function.

Under the present operation procedures the Civilian Personnel Officer can only recommend to the operating official the proper action to take in cases of reassignment, change in mission or transfer. Unless the supervisor clearly understands the particular problems of the engineer—and sincerely attempts to give him every consideration possible in protecting his professional career—the engineer is often helpless to prevent injustices.

• **Employee has responsibility**—Throughout this discussion, the majority of the points under consideration have been those reflecting management responsibility to the professional engineer to increase his professional recognition and status. Establishment of the proper climate, in which the engineer can grow and develop professionally, requires the engineer himself to observe a two-fold responsibility.

Perhaps the primary responsibility is that of doing professional work. Employed on the basis of being a professional engineer, able to perform competently as such, he must avoid doing work that can be performed by lesser skilled individuals, or which is properly a function of another office. He cannot afford to let his technical competency drop through negligence on his part. He must do all within his power and ability to improve his knowledge and ability through such media as self study, university post-graduate or extension courses, technical societies and meetings, and exchange of ideas and information with recognized engineers in specialized fields.

Secondly, among the many credos, codes and standards of conduct which have been written for engineers and other professional occupations, one attribute most often stressed is that of loyalty to one's employer. The importance of this attribute cannot be overemphasized as contributing to the individual's stature, both in the agency he serves and among the engineers with whom he associates.

• **What should be done**—Considering the problems which have been discussed, several solutions to the professionalism problem in federal civil service seem obvious:

1. Require registration of all engineers in the present grade of GS-13 and above, possible including GS-12.

2. Require review of all engineering job descriptions (requirements and qualifications) by a registered professional engineer prior to final classification.

3. Require operating officials of agencies utilizing professional engineers to be familiar with the professional problems of engineers in order to prevent inequities in their administration.

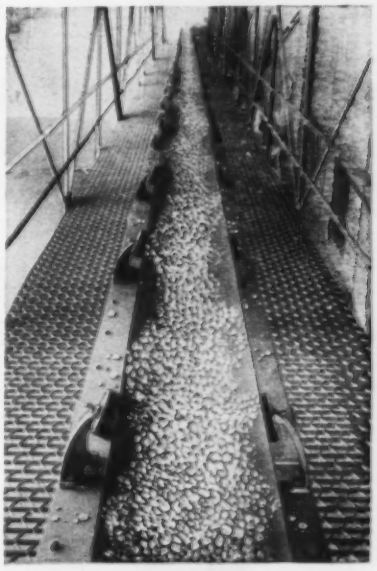
4. Develop separate system of engineering-aide or technician grades for personnel performing sub-professional work. Relieve the professional engineer of administrative duties.

5. Develop means of rapid arbitration of disputes arising between engineers and agencies of the federal government, and improve the channels of communication between engineers and top management. Consider the engineer as part of management.

6. Recognize more clearly the professional status of the engineer by adoption of a uniform code of practice in the administration of engineers within the framework of the Civil Service Commission.

STUMBLING HAZARD ELIMINATED

Spilled materials on a solid walkway caused workmen to stumble and turn ankles. Installation of 80% open Irving Mesh Grating allowed materials to fall through and minimized the hazard.



★

For Safe, Strong, Slip-Proof Stair Treads Specify

IRVING "VIZABLEDG" TREADS

★

Manufacturers of Riveted, Pressure-Locked, and Welded Gratings of Steel, Aluminum and other metals.

"A FITTING GRATING FOR EVERY PURPOSE"

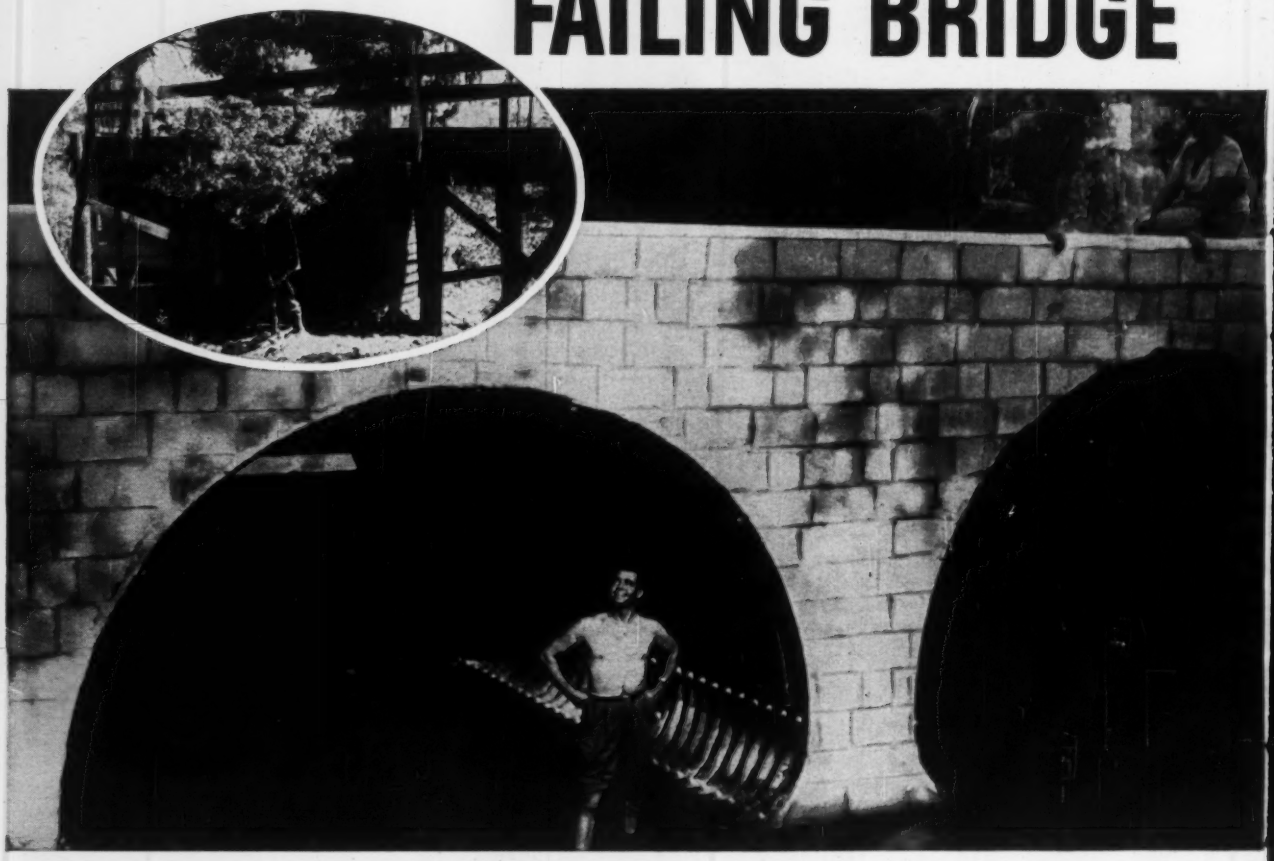
IRVICO

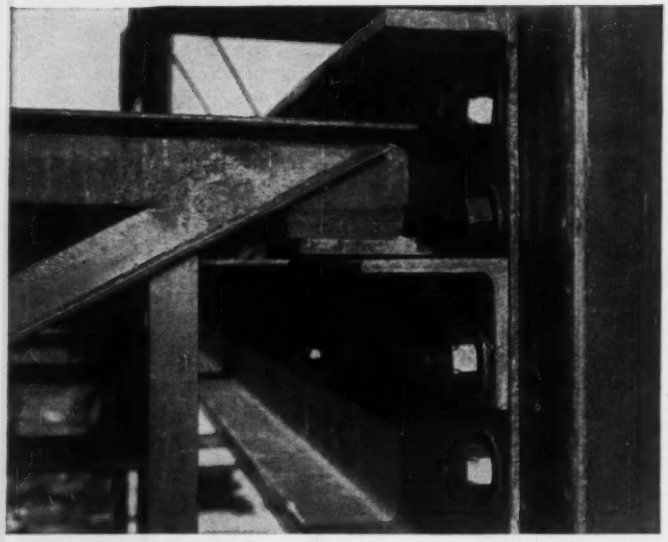
IRVING SUBWAY GRATING CO., Inc.

Originators of the Grating Industry

Offices and Plants at
5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 23, CALIFORNIA

FAILING BRIDGE





MAJOR TIME SAVING is only one of many advantages you gain by using Republic High Strength Bolts instead of conventional rivets for structural steel erection. Others include increased safety through reduction of fire and accident hazards, and more efficient use of manpower through use of two-man bolting crews to replace a heater and three riveters. Moreover, high strength bolt construction is far quieter, and allows complete salvability of structurals if future demands require modification. Finally, bolted joints are stronger since loads are transmitted by friction to the structural members instead of by shear in the fastener. For full data on Republic High Strength Bolts, send coupon.

HIGH-SPEED CONSTRUCTION TECHNIQUES are being developed to meet the nation's need for a high-speed highway system. A good example is continuous paving using Truscon Reinforcing Bars to eliminate expansion joints. Through proper design and placement of these bars, expansion and contraction damage is minimized. Maintenance budgets required by expansion joint construction can be reduced... new construction budgets increased. Send coupon for information.

REPLACED IN 72 HOURS

using Republic Sectional Plate Pipe-Arch

Minimum "road closed" time was a major consideration when a failing bridge on King's Road, Hillsborough County, Florida, required replacement. Use of Republic Sectional Plate Pipe-Arch provided the perfect answer, plus maximum initial and long-term economy.

First, the old bridge was torn out and the creek diverted through a temporary corrugated metal pipe. Next, with simple foundation work completed, twin Republic Sectional Plate Pipe-Arches were quickly and easily erected. Each asphalt-coated pipe bridged a 12-foot 10-inch span, with an 8-foot 4-inch rise. Finally, headwalls and backfilling were completed, road surfaced —and the new bridge opened to traffic just three days after work had begun!

Beyond major time- and money-savings during installation, the Republic Sectional Plate Pipe-Arch Bridge will continue to pay dividends in years of trouble-free service. It won't crack, crumble, or spall under impact, vibration, or shifting fill. Maintenance, beyond that required on any normal stretch of highway, is eliminated.

It will pay you to get full information on Republic's complete line of drainage products. Contact the Drainage Products Manufacturer nearest you, or mail coupon.

Manufacturers of Toncan Drainage Products

Bark River Culvert & Equipment Co.
Escanaba, Mich. • Ironwood, Mich.

Beall Pipe & Tank Corporation
Portland, Ore. • Boise, Idaho

Bluegrass Pipe & Culvert Co.
Louisville, Kentucky

The Boardman Co.
Oklahoma City, Okla. • Tulsa, Okla.

Central Culvert Corporation
Alexandria, La.

Choctaw, Inc.
Memphis, Tenn. • Birmingham, Ala.

Dominion Culvert & Metal Corp.
Roanoke, Va.

Eaton Metal Products Corp.
Omaha, Neb. • Hutchinson, Kan.

Eaton Metal Products Company
Billings, Mont.

Empire State Culvert Corp.
Groton, N. Y.

Illinois Corrugated Culvert Co.
Peoria, Ill.

Jensen Bridge & Supply Company
Sandusky, Mich.

H. V. Johnston Culvert Co.
Minneapolis, Minn. • Aberdeen, S. D.

Logansport Metal Culvert Co.
Logansport, Ind.

M & M Hiway Materials Co.
Columbia, Mo.

North Dakota Metal Culvert Co.
Fargo, N. D.

Northeastern Culvert Corp.
Westminster Station, Vermont

Pacific Corrugated Culvert Co.
Temple City, Calif.

The Pedlar People, Ltd.
Oshawa, Ont.

Republic Steel Corporation
Culvert Division
Canton, Ohio • Harrisburg, Pa.
Charlotte, N. C. • Hammond, Ind.

Spokane Culvert & Fabricating Co.
Spokane, Wash.

Thompson Pipe & Steel Company
Denver, Colo.

Tri-State Culvert & Mfg. Div.
Florida Steel Corp.
Tampa, Fla. • Decatur, Ga.

Utah Culvert Company
Ogden, Utah

Wisconsin Culvert Company
Madison, Wis.

Wyatt Metal & Boiler Works
Dallas, Tex. • Houston, Tex.

TUNNELING JOBS MOVE QUICKLY with complete safety when you specify and install precision-fitted Republic Truscon Tunnel Liner. All parts are furnished in a complete package, including fasteners, to assure trouble-free assembly. Exceptional collapse resistance provides maximum protection to men and equipment during construction and for the life of the tunnel. For details on types and sizes available, mail coupon.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. EN-5274
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send me further information on:

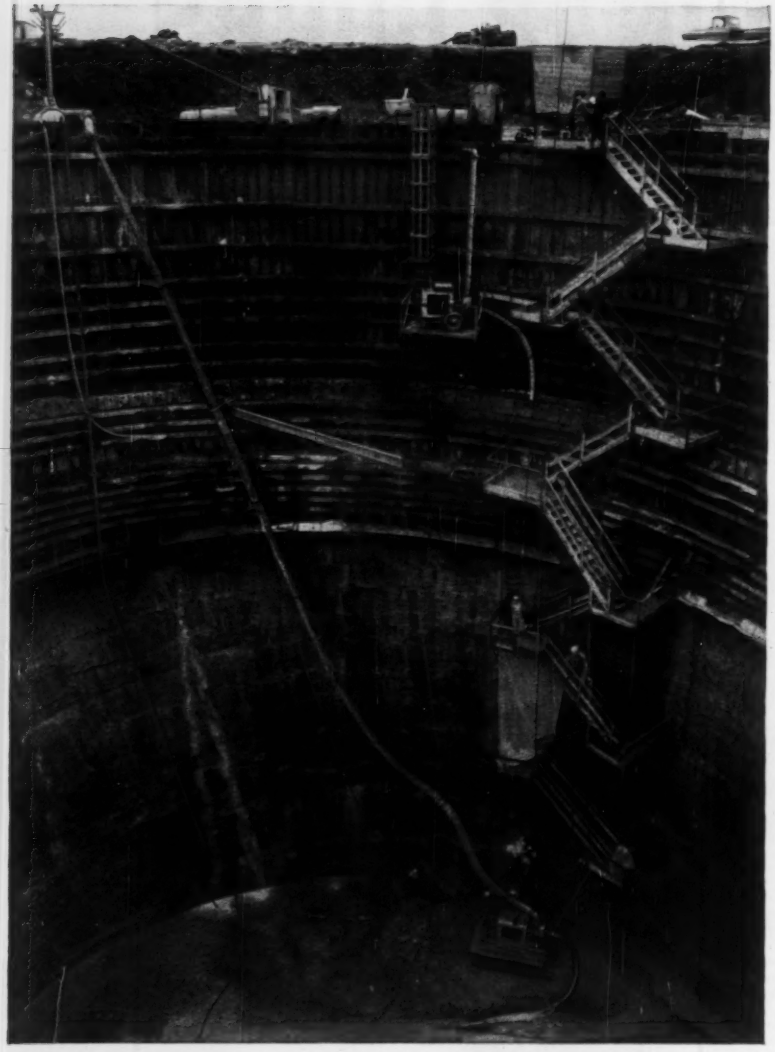
☐ Drainage Products ☐ High Strength Bolts
☐ Reinforcing Products ☐ Tunnel Liners

Name_____ Title_____

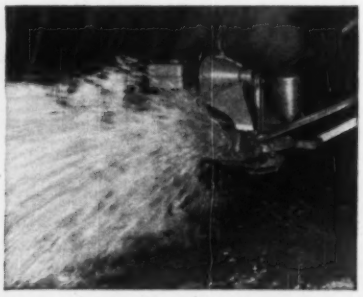
Company_____

Address_____

City_____ Zone____ State_____



PUMPING 127' VERTICALLY AND 250' AWAY to drain 127' deep x 100' diameter riverside excavation for sewer pumping station. Pump is a Jaeger 10" diesel. Above it, a Jaeger 6" pump drains collector ring for the sheet-piled upper half of the hole.



135 LB. ALUMINUM DIAPHRAGM PUMP HAS PATENTED SPRING-BOTTOM BOWL: Often, an inexpensive 2" or 2½" suction hose is all you need with this light yet powerful 3" pump. Exclusive spring-bottom bowl is shock-absorbing and self-cleaning. Also built in 4" size.

OVER 100,000 GPH AT ONLY 1450 RPM: A Jaeger 6" pump is the only one of its size that moves as much as 1720 gpm at this easy, fuel-saving speed. Holds prime, too, for pumping seepage after hole has been dewatered.

ENOUGH PRESSURE FOR 3 JOBS: This Jaeger 6CPH jetting pump is simultaneously supplying two jetting rigs and a steam boiler, putting in 50' timber piles for filtration plant. Jaeger builds the pressure pumps you want, sizes 2" to 6", pressures to 300 psi.

Jaeger pumps are oversize; give oversize performance

You're repaid for knowing pumps when you buy a Jaeger "Sure Prime". You get a bigger shell and impeller, an engine of the largest horsepower applicable, a positively lubricated seal that seems to last forever, and two independent, simultaneous priming actions. Result—doubly-sure fast priming under all conditions, bigger capacity at slower operating speeds, sustained efficiency and longest life from both pump and engine.

Base your pump buying on up-to-date performance data. See your Jaeger distributor or write for guaranteed actual performance of latest model Jaeger pumps in 1½" to 10" sizes.

THE JAEGER MACHINE COMPANY

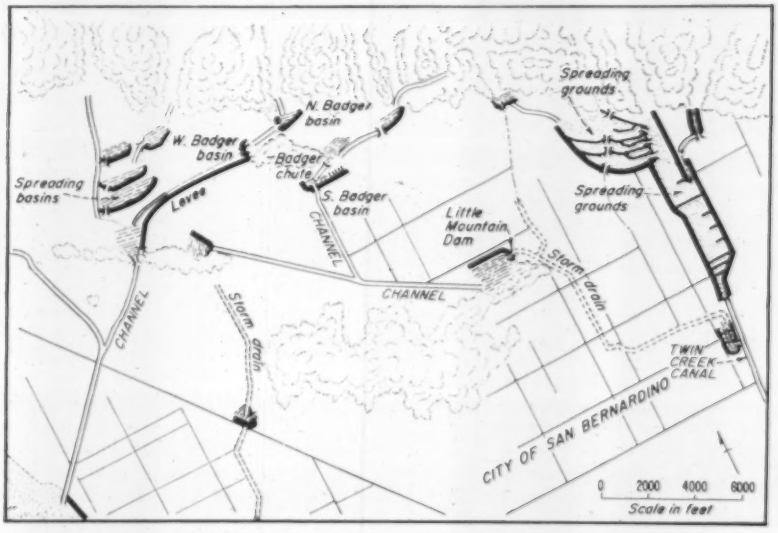
200 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • CONCRETE MIXERS • TRUCK MIXERS • PAVING FINISHERS • SPREADERS

Flood control and groundwater recharge are accomplished by dispersing flood waters rather than impounding them

GUNITE LINED CHANNELS have sandy bottoms to promote percolation of flood waters into ground water table.

Flood Control System Nurses Runoff



FLOOD CONTROL NETWORK controls runoff from 8,000 acre area north of San Bernardino by dispensing water to unlined channels and spreading areas.

RAIL FENCING bound in concrete is used for bottom control in unlined channels. Rail fence sides help to control flow and debris.

A pressing need to nurse underground water supplies as well as to control floods from fire devastated watersheds have lead to the development of a dual purpose flood control project protecting San Bernardino, Calif. By its use of sandy bottomed or completely unlined channels and extra detention basins to promote percolation into the ground, the project incorporates water conservation features while performing its primary role of controlling flood runoff.

The City of San Bernardino has suffered several times—notably in 1938 and 1954—from heavy runoff after abnormal rainfall. The problem becomes especially acute after dry-season fires such as the one in 1954 which devastated some 5,000 acres. During such times the natural channel around Little Mountain at the edge of the city overflows its banks to inundate the city.

This first major project of the San Bernardino County Flood Control District to control runoff from about 8,000 acres of watershed north of the city was substantially completed in October. The entire cost of $2.4 million was locally financed by bond issue.

The dual purpose system, designed by Daniel, Mann, Johnson & Mendenhall of Los Angeles working with W. P. Rowe & Son of San Bernardino, consists of a network of ten major detention-debris-spreading basins, three dams, ten miles of channel, and three miles of underground conduit. The completed project will serve to reduce a 100 year storm runoff to that of a 10 year storm before emptying into the Twin Creek Channel, a tributary of the Santa Ana River.

The designers estimate that about two to three times as many basins as

SAUERMAN
Field Reports...

TWO DIFFICULT JOBS MADE EASY

DIGGING A PIPE TRENCH across a river. DragScraper and carrier travel the crane's hoisting line. After inhauling the load, the DragScraper is gravity-returned to the excavation point. (*Request Field Report 228.*)

HOT SCALE dropping into tunnel is conveyed to a water sluiceway for disposal. Personnel and vulnerable equipment do not enter this hazardous area. (*Request Sauerman News 146.*)

Request Catalog J, Crescent Buckets, and Catalog E, Scraper Storage, for complete descriptions of these Sauerman Methods.

SAUERMAN BROS., Inc. 632 S. 28th AVE. Linden 4-4892
BELLWOOD, ILLINOIS

. . . Flood control by dispersal in channels

CONCRETE BOTTOM CHECKS are spaced in air-placed concrete channel sections at intervals of from 100 ft to 800 ft depending on slope.

would be needed for flood control alone have been provided—the additional basins serving to trap debris and to facilitate percolation.

The dams are all earthfill, the largest and last in the sequence—at Little Mountain—being of the impervious blanket type, riprapped on both sides. It stands 26 ft high with a bottom width of 150 ft, extends a length of 2,100 ft and has a capacity of 300 acre-ft.

Most of the open channels are either wholly or partially unlined to promote maximum seepage to the groundwater table. The notable exception is a half mile section of channel below Little Mountain Dam which has both a concrete bottom and united sides. It is designed to carry 2,000 cfs. All channels are trapezoidal in cross-section with flow capacities up to 4,200 cfs.

The partially lined channels are constructed with united sides and a sandy bottom. Concrete bottom checks are spaced in these channels at 100 ft intervals along the high slope reaches and at 800 ft where the slope becomes flat.

Unlined channels have rail fenced sides for control of flow and debris. Bottom control of these channels is provided by underground rail fences spaced at from 100 to 800 ft intervals. The rails are driven on 4 ft centers across the channels, using wire mesh between the rails.

An 11,000 ft underground conduit, leading from the concrete-lined channel below the Little Mountain Dam to the Twin Creek Channel, passes under the city. This concrete pipe varies in size from 84 in. to 132 in. and there are also box sections of from 7 x 9 ft to 10 x 11 ft.

• **Construction costs**—For construction purposes the project was divided into three portions: The large dam, the conduit between the dam and the Twin Creek Channel, and the basins and channels above the dam. Work above the dam, which included 624,000 cu yd of excavation, was completed last March in time for the expected spring runoff by Page and Kingsley at a cost of $910,000. E. A. Irish contracted for the conduit below the dam, which has just been completed, at a cost of $1,175,000. Little Mountain Dam, which stands very nearly completed at this time, is being built by a joint venture of Yeager, Lowe & Watson and Bert Altfillisch for $131,000.

All work was accomplished under the general direction of Martin A. Nicholas, chief engineer of the San Bernardino County Flood Control District assisted by Arthur Sidler, office engineer, and Roy Taunton, field engineer. James D. Reiter of Daniel, Mann, Johnson & Mendenhall served as project engineer for the designers.

It takes just two steps to assemble the FLUID-TITE Coupling. Lubricate the tapered edge of the gasket. Then slide in the pipe.

Major Advance In Waterworks Industry. K&M's exclusive FLUID-TITE Coupling provides permanent, water-tight, root-tight connections. Allows deflection of up to 5°. Assembled in any weather.

SLIDE IT IN QUICK... IN 2 EASY STEPS

IT'S "K&M" ASBESTOS-CEMENT PRESSURE PIPE WITH EASY-TO-INSTALL FLUID-TITE COUPLING

Installation is fast and economical! It doesn't require skilled labor, heavy machinery, or heavyweight coupling pullers. Install it in any weather.

The seal grows tighter as the pressure climbs! Coupling rings expand as water mains fill. Rings have holes on one side for self-energizing action.

It's practically indestructible! "K&M" Asbestos-Cement Pressure Pipe is non-tuberculating, non-electrolytic, and corrosion-resistant. Its first cost is often the last cost. Pressure remains normal—pumping costs stay low.

Write today for more information.

K·M
BEST IN ASBESTOS

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

Colors and

An effective and attractive signing system featuring a color and number code keeps plane-bound cars on the right course as they seek their way over 10 miles of road at New York International Airport.

A color and number code, a quick education for the driver while he is on the move and minimum wording in big signs at decision points are some of the features incorporated in the guide sign system at New York International Airport. The new signs, developed especially for the airport, lead the traveler through 10 miles of curving, diverging roads to the desired airline area.

The system is keyed to the divisions of Terminal City, in the center of the airfield, into four areas. Sign-wise, each area is assigned a number on a color background: 1–green, 2–blue, 3–red and 4–yellow. Color and number are worked together to help mark the correct route.

GUIDE CODE IS DECLARED in overhead sign and the numbers set in colored boxes are . . .

. . . DEFINED in signs like this along side of road

Numbers Help Steer Cars to Planes

At present there are two areas in operation, 2 and 4. Area 2 is the brand-new International Arrival Building and Wing Buildings area; 4 is the temporary terminal that now services domestic flights of the airport's airlines. (Planned for the near future are a new terminal for TWA and additional elaborate terminal buildings for some other airlines now in Area 4. Tentatively, Area 1 will hold Eastern, Pan American and Northwest Airlines; Area 3 will have American and United.)

• **Education on the move**—Getting to any one of these areas is made a simple matter of following the signs that bear the number and color for that area. First, however, a quick education in the code is given to the driver as he traverses the two-mile approach road to Terminal City.

It starts with the guide code declared in an overhead sign that carries four numbered blocks of color. Copy on the sign reads: "Passenger Terminal. Directory Signs at Right. Follow the Colored Sign."

The code is then defined in four signs spaced along the side of the road, one following the other. Each sign—they run in numerical order—carries the number in the color block, and copy stating which facilities are in that area. For example, the second sign has a blue block with the figure 2 and reads: "International Arrival Building. Wing Buildings."

Then to set the lesson, the whole sequence is repeated—overhead sign declaring the code, side of the road signs defining the code.

The easily assimilated code is now ready to be put to use.

• **Using the lesson**—As the driver continues on his way, he soon comes upon what will be the advance guide sign for Area 1. This sign, conveniently ahead of the turnoff point, is, like all other advance warnings, an overhead sign.

The advance sign repeats the earlier defining sign in code and copy. It also, in negative lettering (white on dark background), advises the driver seeking the area to move into the righthand lane.

At the turnoff decision point—which is a fork in the road in every instance—there is an overhead sign over each leg of the fork. That over the right fork duplicates the advance sign, substituting a directional arrow for the "Keep Right" advice. The seeker of that area, already in the right lane, simply turns off and goes on to the airline building. That same sign, of course, also eliminates the right fork for the other-areas-bound drivers.

The overhead sign spanning the left leg of the fork shows off one of the code system's best points. This sign presents the remaining colors and numbers—but no wording, to make for quick driver recognition and decision. To have included in a sign at this point descriptive copy for the remaining areas, Port of New York Authority engineers point out, would have resulted in that undesirable and properly shunned situation: Lots of words and too little time to read them.

The driver passing into the left leg of the fork then finds an overhead advance guide sign announcing the next area. And the next fork presents the same decision situation as did the first—minus one area.

Once the driver has made his turnoff at a fork, there are smaller signs, mounted on the lighting standards, assuring him he is going in the right direction. There are also signs that point

ADVANCE sign prepares driver for . . .

. . . DECISION at fork in the road

Onan ELECTRIC PLANTS

ELECTRIC PLANT NEWS

Onan ELECTRIC PLANTS

Here's how Onan Portable Power pays you added profits!

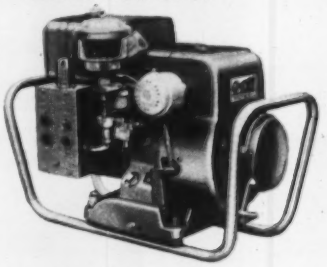
Gives you cost-cutting power on the job . . . *from the start*

Carry, truck or wheel in an Onan and you're all set with plug-in power for the whole crew. No wasting time with hand tools . . . no waiting for utility lines. If you're not using electric power *full time* chances are you're losing more money than the cost of several Onan plants.

4-cycle, season-long dependability

Onan plants are rugged . . . built to take abuse from weather and workmen. Special cast-iron block Onan engine and drip-proof all-climate Onan generator are direct-connected in a rigid, compact, smooth-running unit. Out-perform and outlast "assembled type" plants using general purpose engines. *Special contractor models from 500 to 10,000 watts.*

2500-watt model serves crew of 3!



Model 205AJ-1P, most popular Onan unit with residential contractors. Complete as shown with 4 plug-ins, pilot light, carrying frame, recoil starter . . . ready to run. Dolly-mounted model also available.

New folder helps you choose the right model for your job. Write today!

See your distributor for a free demonstration

D. W. ONAN & SONS INC.

2892A University Ave. S.E., Minneapolis 14, Minnesota

ELECTRIC PLANTS • AIR-COOLED ENGINES • KAB KOOLER • GENERATORS

Onan ELECTRIC PLANTS

. . . Signs are big ones

THE WAY to other areas from within one area is pointed out by signs such as this one.

the way to the other areas from within the chosen area.

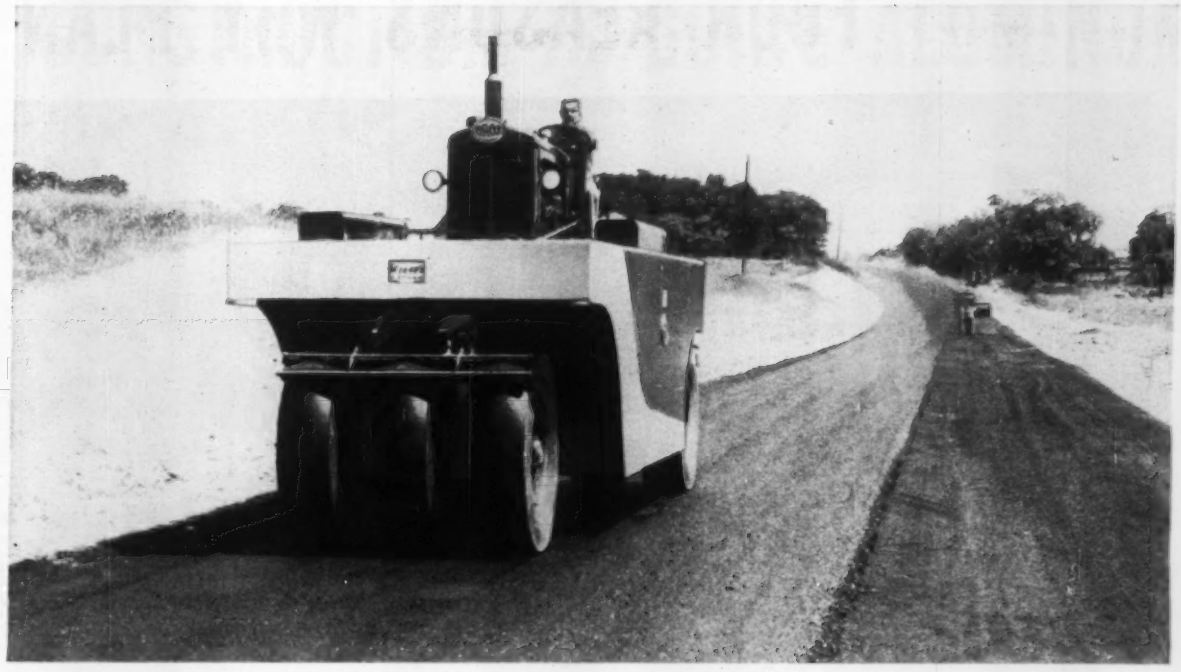
• **Big and lighted**–Signs in the guide system are all lighted; the overheads and side-of-the-road signs are lit by fluorescent tubes along the bottom of the panel. (All other signs in the airport area are, at the least, reflectorized for easy reading.)

And the signs are big ones. For example, the overheads, which declare the code, measure 31 ft long and 6 ft high and stand about 15 ft above the roadway. They contain 12 and 8-in. black letters against a white background. The four color blocks are roughly 3x3 ft each, with numbers in white.

The side-of-the-road signs run from 17 to 22 ft long and 6 ft high, with lettering also black on white. Overhead advance guide signs are 19 ft by 6 ft, again with black lettering except for the "Keep Right", which is carried in a reverse panel along the bottom. The overhead signs at the forks measure about 19 ft by 6 ft.

Steel pipe, 10 or 12 in. in diameter, is used as framing for the signs. The panels are steel plate with porcelain facing.

The signs were developed by the traffic engineering division–headed by Louis E. Bender–of the Port of New York Authority, operator of the airport.



Front wheels of BROS SP-730 roller oscillate as a unit, rear wheels oscillate in pairs to accomplish *uniform consolidation by kneading*. Far greater compactive forces are exerted than would be expected under normal traffic. Finished mat has enough *immediate* stability to withstand effects of modern traffic and yet has maintained enough voids to provide flexibility.

New BROS SP-730 (30-TON) PNEUMATIC ROLLER—

Achieves Maximum Consolidation of Flexible Pavements

● In a search for better compaction of asphaltic mats, the State of Ohio adopted specifications in 1956 for a *self-propelled rubber-tired roller* capable of wheel loads and contact pressures above the maximum produced by legally loaded trucks.

One such roller which met the new specifications was tested in 1957 to determine if it would consolidate a newly laid asphaltic concrete mat to the extent that the finished pavement would be stable under modern heavy traffic and still have enough flexibility to respond to any subsequent subpavement movement.

It was a BROS Model SP-730 (Self-Propelled, 7 Rubber-Tired Wheels, 30 Tons Maximum Weight) with three wheels forward and four wheels in the rear. Construction of the mat in no way varied from standard methods except that the BROS rubber-tired roller was used in place of the steel tandem roller usually operated behind the initial roller.

The BROS roller was used on a project in Licking County to construct a three inch asphaltic concrete binder course over a base of five inches of waterbound macadam on an eight inch granular subbase.

IN-PLACE DENSITY TESTS ON THE COMPLETED MAT, CONDUCTED BY THE OHIO STATE HIGHWAY DEPARTMENT, SHOWED AN AVERAGE VOID CONTENT OF 4.01% AND AN AVERAGE DENSITY OF 100.99%! VARIATIONS IN DENSITY AND IN VOID WERE, FOR ALL PRACTICAL PURPOSES, ELIMINATED. (SEE TABLE.) AND, WHAT'S MORE, DESIGN DENSITY WAS ACCOMPLISHED BY ONLY ONE PASS OF THE ROLLER!

Results of this test *and* of a second test on a similar project in Clermont County (which showed an average void content of 3.71% and an average density of 101.28%) are now available on request.

Can your state afford *not* to get asphalt mat compaction results similar to those described? Send for the complete report today. You'll be on your way with *initial* compaction that's final . . . to greater, longer-lasting pavement stability *than has ever before been possible!*

SP-730 RESULTS ON THE COMPACTION OF ASPHALTIC CONCRETE LICKING COUNTY, OHIO

Percent Voids	Percent of Design Density	Position in Cross Section (From C)
4.40	100.60	10 ft. lt.
4.90	100.10	4 ft. lt.
5.08	99.92	on c
2.73	102.27	4 ft. rt.
2.34	102.66	10 ft. rt.
4.69	100.31	10 ft. lt.
3.02	101.98	4 ft. lt.
3.93	101.07	on c
4.40	100.60	4 ft. rt.
4.11	100.89	10 ft. rt.
2.13	102.87	10 ft. lt.
4.58	100.42	4 ft. lt.
6.18	98.82	on c
4.14	100.86	4 ft. rt.
3.54	101.46	10 ft. rt.
4.01	100.99	AVERAGE

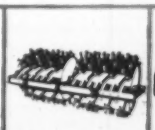
BROS

BROS *Incorporated*

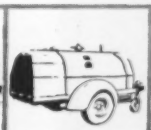
ROAD MACHINERY DIVISION

1057 TENTH AVE. S.E.
MINNEAPOLIS 14, MINN.

Write today for the full report on the Ohio tests and for complete new literature describing the new BROS SP-730 pneumatic roller. It's free of cost or obligation!



SHEEPSFOOT TAMPERS

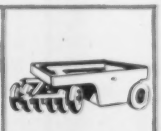


STEAM GENERATOR

BITUMINOUS CIRCULATOR

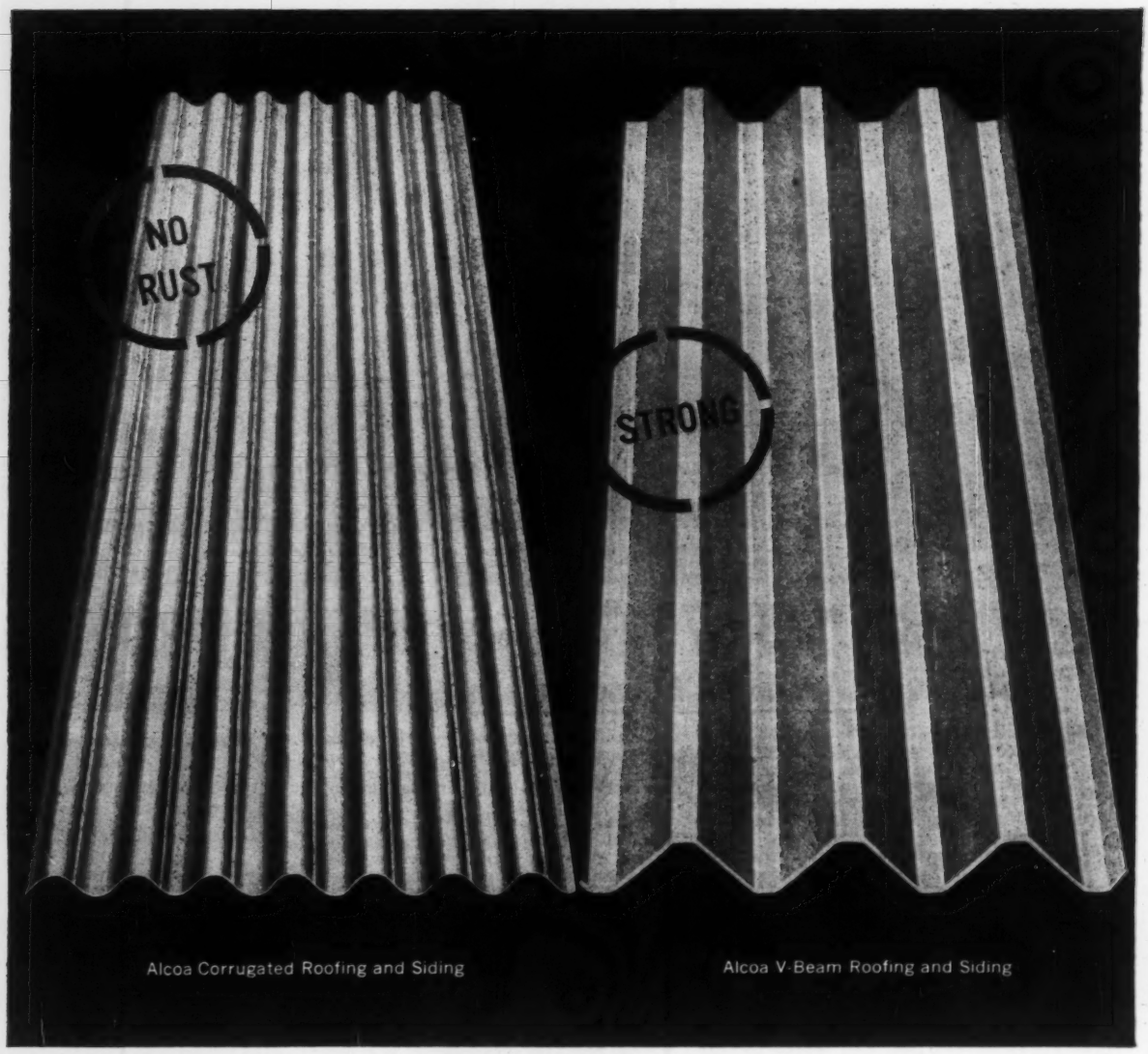
VIBRA-PACTOR

9-TON SELF-PROPELLED ROLLER



9 AND 13-TON ROLLERS

FOUR REASONS WHY PLANT

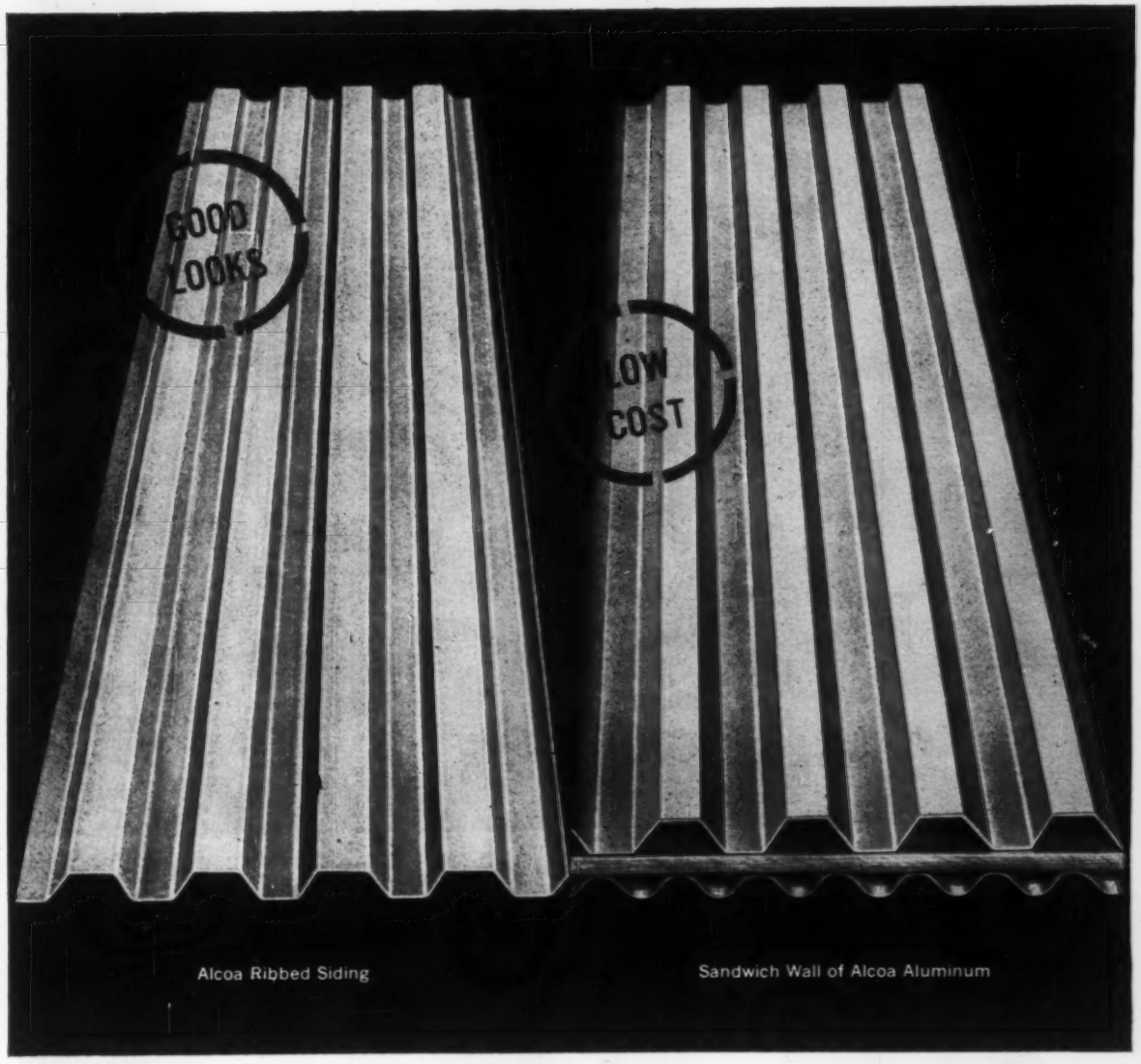


Save construction money now and maintenance costs later with these Alcoa® Aluminum Industrial Building Products and Materials . . . for both new plants and plant expansion:

1. Humid atmospheres and industrial fumes mean nothing to Alcoa Corrugated Roofing and Siding. Once up, that's it! No painting, no expensive maintenance of any kind!
2. Aluminum-clad industrial buildings can be *strong buildings* with Alcoa V-Beam Roofing and Siding. Safely carries 30-lb/sq-ft uniform load on a 10-ft purlin spacing.
3. Aluminum-clad industrial buildings can be *good looking buildings* with Alcoa Ribbed Siding. This carefully designed configuration makes buildings clean-lined with good vertical shadows from the ribbed pattern.
4. Sandwich wall of Alcoa Aluminum is the lowest cost insulated metal wall system known! With a U value of .155, it has three times the insulating value of 8-in. brick. Goes up fast, too. Permits economical air conditioning.

All of these materials deliver the benefits inherent in aluminum—corrosion resistance, low cost and good looks. And they are sold and erected by Alcoa Approved Applicators. For complete data, mail coupon on next page. Aluminum Company of America, Alcoa Building, Pittsburgh 19, Pennsylvania.

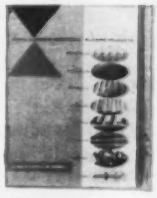
CONSTRUCTION IS GOING ALUMINUM



Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM
INDUSTRIAL BUILDING PRODUCTS
ALUMINUM COMPANY OF AMERICA

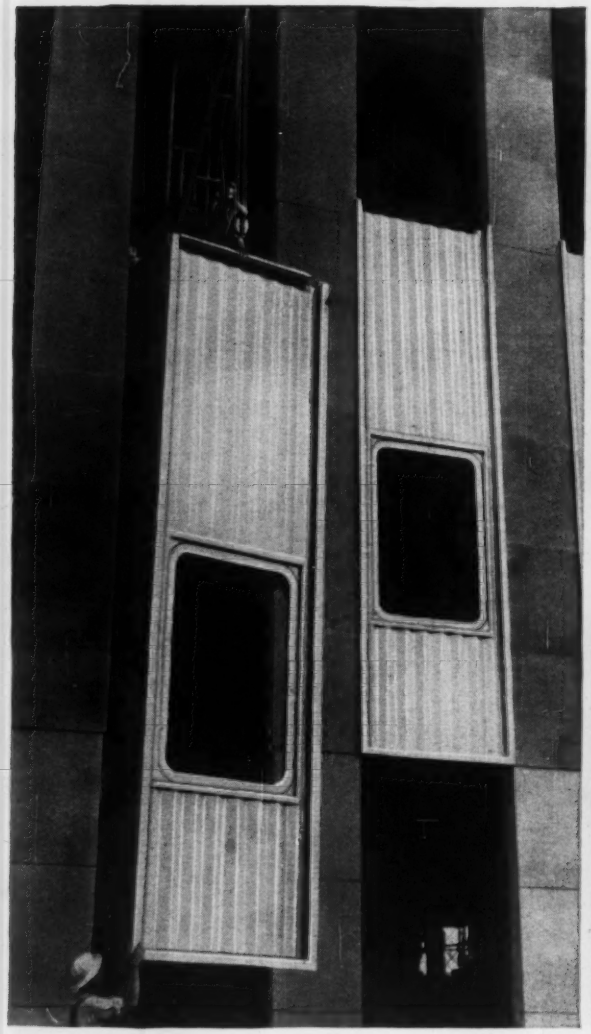
"ALCOA THEATRE"
Exciting Adventure
Alternate Monday Evenings

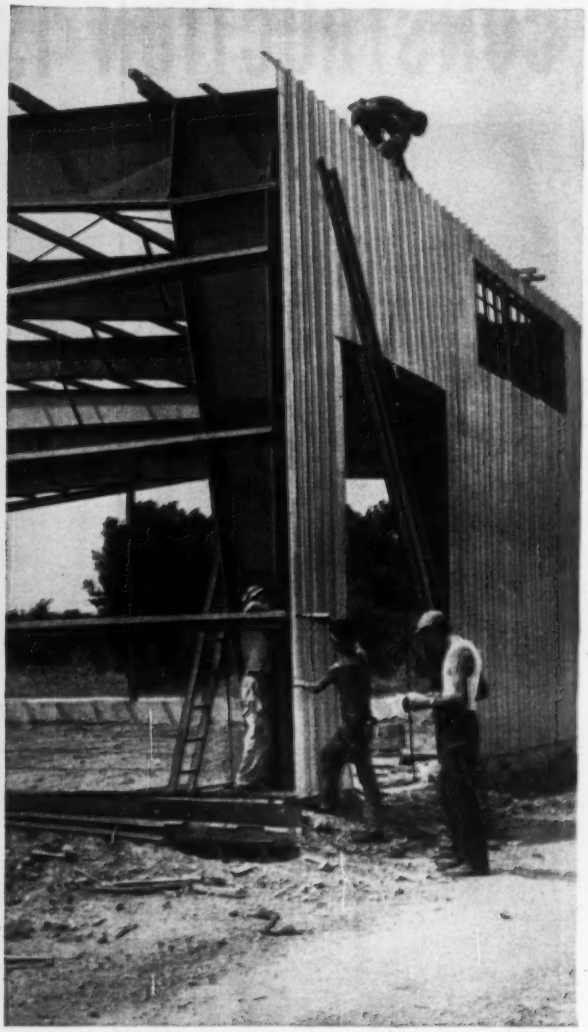


ALUMINUM COMPANY OF AMERICA
860-C, ALCOA BUILDING, PITTSBURGH 19, PA.

Please send FREE book packed with technical information on how to build and save money with Alcoa Aluminum Industrial Building Products and Materials.

NAME_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____





Two modern ways to build well

There are good reasons why so many architects use structural steel frames and metal curtain-walls in modern structures like this Chicago skyscraper.

Metal building components have a high strength-to-weight ratio that conserves materials and floor space. They permit fast erection—early occupancy—and are extremely fire and weather resistant.

Butler uses this same quality system for one-story construction. So, if you are planning a new one-story building of any kind—use the Butler Building System—the lowest-cost way to build well.

Pre-engineered, mass-produced Butler components minimize costly preliminary engineering and custom fabrication. Precision-made to permit fast assembly, they save weeks—even months—of planning and construction time.

The clear-span interiors are spacious, without a single column or truss to interfere with planning production layouts. Butler buildings also provide facilities for superior lighting, ventilation, and illumination—a better working environment.

They are economical to maintain and can be expanded quickly and economically whenever additional space is needed.

Get the full story on this modern way to build, from your Butler Builder. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or write direct.

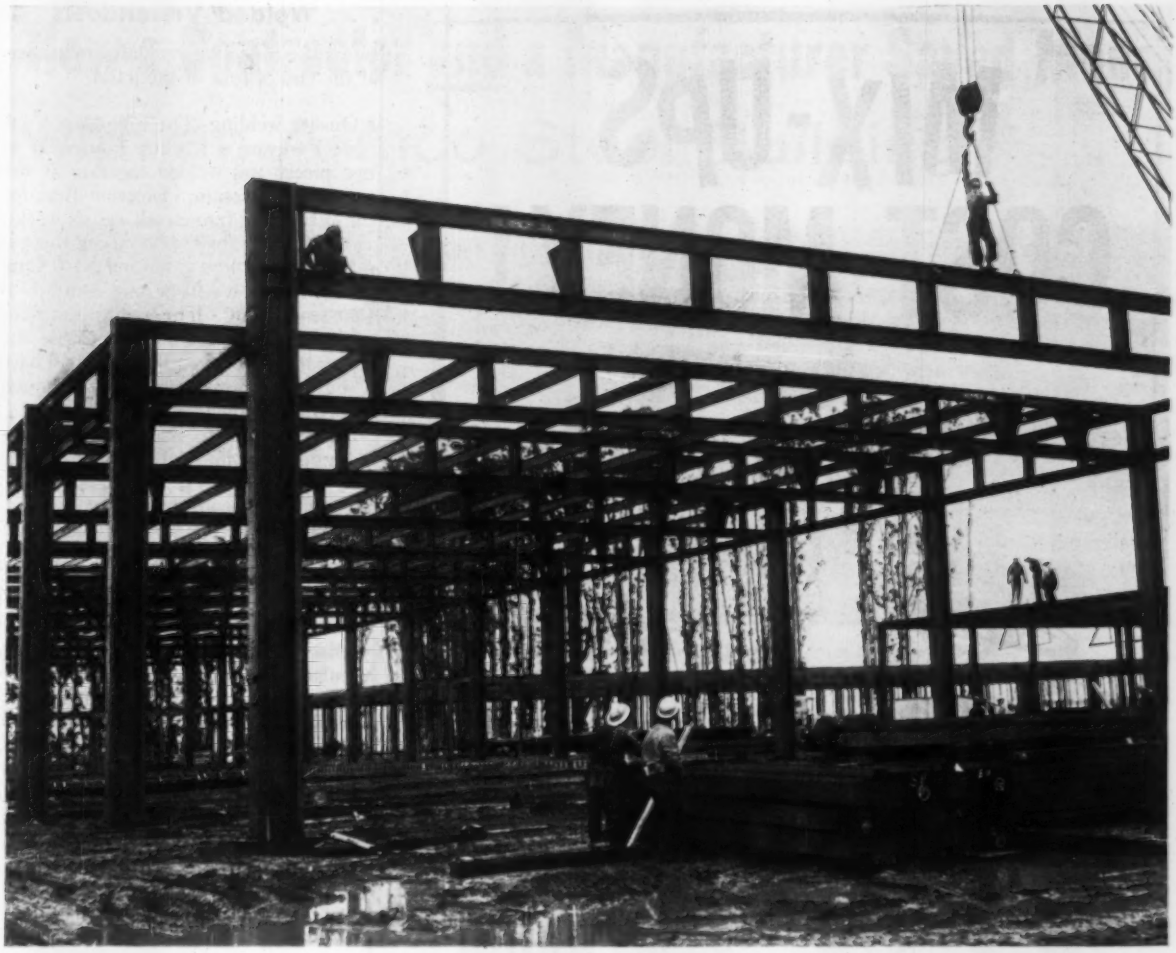
BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

7418 East 13th Street, Kansas City 26, Missouri

Manufacturers of Metal Buildings • Equipment for Farming, Dry Cleaning, Oil Production and Transportation, Outdoor Advertising • Custom Fabrication

Sales offices in Los Angeles and Richmond, Calif. • Houston, Tex. • Birmingham, Ala. • Atlanta, Ga. • Kansas City, Mo. • Minneapolis, Minn. • Chicago, Ill. • Detroit, Mich. Cleveland, Ohio • Pittsburgh, Pa. • New York City and Syracuse, N.Y. • Boston, Mass. • Washington, D.C. • Burlington, Ontario, Canada



STEEL FRAME provides economical structure for California high school. This building will house two gyms and an auditorium.

Welded Steel Trusses Span Three-Use Building

Vierendeel trusses spanning 88 ft are key structural elements of a California high school building that includes two gyms and an auditorium. In addition to the 336 ft long gym-auditorium structure, other buildings on the project are also steel frame.

The structures are for the new Mills High School at Millbrae, Calif., being built for the San Mateo Union High School District. All facilities are being constructed for an optimum enrollment of 1,750 and a maximum capacity of 2,000 without additional construction. Total cost of the current work is $4 million including swimming pool, athletic field, roads, paving and other site development work.

• **Low costs per sq ft**—Cost of the structural steel framing amounts to $1.40 per sq ft of roof area. The 220,000 sq ft of steel structure is roofed by cellular steel decking that costs 44¢ per sq ft. Thus, the entire steel frame and roof is provided for $1.84 per sq ft including the contractor's overhead and profit.

Placing the boys and girls gymnasiums and the auditorium under one roof results in substantial savings. Architect John Lyon Reid & Partners used this same scheme at another high school for the same district. At that time, however, the field connections were designed for riveting—the connections were, at the contractor's request, actually welded.

At Mills High School, however, all shop and field connections were designed for welding—except that joists are connected to beams by machine bolts. This design is considered to have saved money due to the many rigid connections involved. Without welding, beam sizes in many cases would have had to be deeper to compensate for weakening of members due to rivet or bolt holes. And welding permitted the designers to use a uniform steel beam size of 12 in. with only the weight varied. This simplifies details. It also helps designers and subcontractors because they can count on the uniform 12 in. depth.

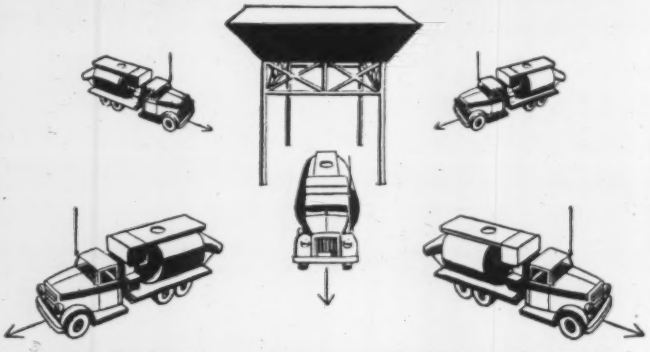
Columns for the gym and auditorium building are 30 ft high and are built up by welding two 15 in., 50 lb channels as flange members to ½ in. thick by 24 in. wide plates as web members. The columns are supported on spread footings.

The 88-ft-long, transverse Vierendeel trusses are 4 ft deep and are made of 12 in., 45 lb, wide-flange beams. Spanning between the columns placed on 28 ft centers are shorter Vierendeel trusses for longitudinal stiffening. These are made of 12 in., 27 lb, wide flange members.

To brace the lower cord of the

(Continued on page 58)

MIX-UPS COST MONEY!



DIRECT YOUR EQUIPMENT
to the right job—at the right time!

VIA DU MONT® 2-WAY RADIO

Reroute partial loads . . . avoid costly traffic tie-ups . . . maintain complete, instantaneous control over your mixer operations via Du Mont 2-Way Radio. It's just like having a direct telephone line to every piece of your equipment. And Du Mont 2-Way Radio is built to take it on the job with dependability and performance matching your best equipment.

Extend the services of your present equipment—make more money—with Du Mont 2-Way Radio.

***Write for complete details right now . . .**

Mobile Communications Department
ALLEN B. DU MONT LABORATORIES, INC., CLIFTON, N. J.

. . . Welded Vierendeels

transverse trusses gusset plates are placed at the end of four of the joists.

• **On-site welding**—The long-span Vierendeel trusses were shop fabricated in two pieces and welded together at the site before erection. Erection time for the entire steel framework was six weeks.

Inside the 336x88 ft building there is a 112 ft long boys gym, and 84 ft long girls gym and a 140 ft long auditorium that seats 1,000. The auditorium floor is dug into the ground to provide the necessary slope. And the gyms will have a built-up spring-type floor of wood placed on a concrete slab.

In other structures outside the gymnasium-auditorium area, wide flange columns are spaced 28 ft on centers on a checkerboard pattern with alternating orientation. The columns are connected at top in both directions with 12 in. beams forming multiple-span rigid bents. Such an arrangement provides equal lateral stiffness against earthquake forces in the two perpendicular directions.

The classroom building provides for movable partitions to alter the size of rooms as school needs change. A similar high school for the same district (ENR May 26, 1955, p. 46 and 47) proved so successful that the school officials specifically requested a repeat of the scheme. The classrooms can be arranged in any multiple of a 14 ft module (columns are on 28 ft centers).

Heating, lighting and ventilating are provided for each 14 ft square. Since many of the rooms are inside rooms, lighting is provided by skylights of prismatic glass that reflects direct rays. Artificial lighting is arranged around the skylights—that, of course, are provided for each 14 ft module—so it will not be necessary to change the light source in case the partitions are moved.

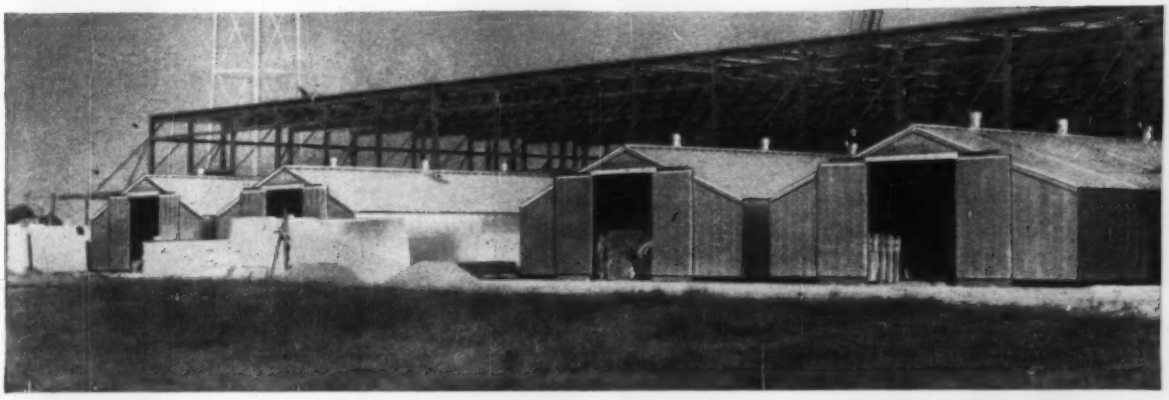
Partners in charge of design for John Lyon Reid & Partners were Burton L. Rockwell, architect, and Alexander G. Tarics, structural engineer. General contractor is Rothschild, Raffin & Weirick and Northern Constructors, a joint venture. Steel erection was by Herrick Iron Works, Hayward, Calif.

Navy Orders Device For Blast-Effect Studies

An air blast simulator that will enable researchers to produce the extremely high pressures associated with atomic explosions is now under construction for the U. S. Navy's Research and Evaluation Laboratory, Port Hueneme, Calif.

The simulator will be large enough to subject full-scale structural elements to a concentrated destructive power equal to that of an atomic explosion; yet it can be operated without risk.

How a Contractor and a Manufacturer Saved Money with an Armco Steel Building



Four Armco Steel Utility Buildings, in foreground, provide shelter for textile machinery while the new Carlisle Finishing Company plant is being completed. Later, they were dismantled and moved to other cities for re-erection on permanent sites.

When Carlisle Finishing Company, Carlisle, South Carolina, drew up plans for a new plant, the company and the building contractor made a novel agreement that saved money for both of them!

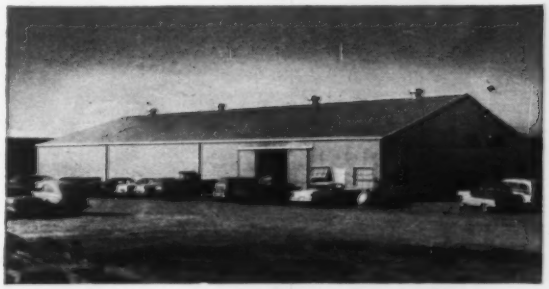
The contractor, Daniel Construction Company, Inc., of Greenville, South Carolina, put up an economical 70- x 140-foot Armco Steel Building for their use during construction of the main plant. After construction work was completed, the Armco Building was turned over to Carlisle, a division of Cone Mills Corporation, textile manufacturers of Greensboro, North Carolina. Now it's a permanent warehouse.

On the same project, company officials had the problem of storing textile machinery arriving before the plant was completed. As a solution, they erected four Armco Utility Buildings, each 36 by 48 feet, adjacent to the site for this purpose. After the new plant was completed, two of the buildings were dismantled, moved about 150 miles to Greensboro, North Carolina, and re-erected at the owner's White Oak Plant. The other two buildings were also dismantled and sent to the Greenville, South Carolina, plant to be used for storage.

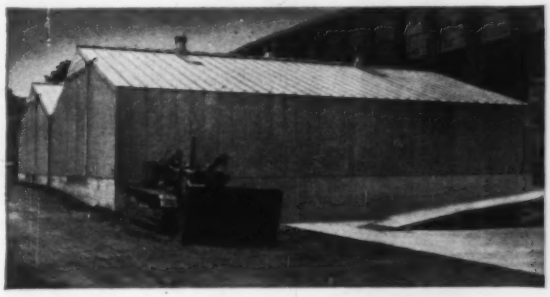
In each case, an Armco Building provided shelter at the construction site and was later used as a permanent structure for another purpose.

* * *

Armco Buildings, with their all-bolted construction that simplifies erection or re-erection, are one of the more than 30 Armco Drainage and Construction Products for industrial, municipal, highway and railway applications. Write for data. Armco Drainage & Metal Products, Inc., 3098 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



This Armco Steel Building was purchased by the Carlisle Finishing Company to serve as shop, office and equipment storage for the contractor. According to plan, it was later used as a warehouse by the owner.



These Armco Utility Buildings are shown here after being dismantled, moved 150 miles, and re-erected at another of the owner's plants.

Armco Construction Products

Now from FORD

New Ford C-1000 with the 260-hp. 477 Super Duty V-8 engine. Maximum GVW 31,000 lb., GCW 65,000 lb.

New Ford T-850, choice of 3 engines. Choice of 2 bogies, up to 45,000 lb. GVW and 70,000 lb. GCW.

New Ford F-1100 with the 277-hp. 534 Super Duty V-8 engine. Maximum GVW 36,000 lb., GCW 65,000 lb.

AMERICAN BUSINESS BUYS MORE FORD TRUCKS THAN ANY OTHER MAKE!

engines up to 534 cu. in...

Biggest truck engines ever built by Ford! Three all-new, Super Duty V-8's designed to stand up and deliver on America's toughest truck runs. 401-, 477- and 534-cu. in. displacements. Up to 277 hp.! Ten all-new extra heavy duty truck series rated up to 75,000 lb. GCW.

Perhaps the biggest news about Ford's all-new Super Duty V-8's is not their bigness . . . not their tremendous power output. The big story may well be in the many durability advancements, offered in the most rugged, most dependable Ford Truck engines ever built.

For instance, materials developed for the missile program are used in parts such as valve stem oil seals. Oil filters are of the same type used in commercial aircraft. The traditional exhaust-heated intake manifold is replaced by a new water-jacketed induction system. Submerged-type electric fuel pumps virtually banish vapor lock. Head gaskets are of heat-resistant stainless steel. Two compression rings and the oil control ring are chrome-plated for longer wear. A 50-amp. alternator replaces the generator as standard equipment.

These are but a few of the many advancements you'll find in Ford's thoroughly tested all-truck Super Duty V-8's for 1958. Tested in dynamometer laboratories, tested on the proving grounds, tested in commercial fleets from coast to coast . . . these new Ford V-8's, products of over six years of engineering development, are now ready to serve you.

Get in touch with your Ford Dealer for complete data on the three all-new Super Duty V-8's, and the *ten* all-new Extra Heavy Duty truck series, including tandems up to 51,000-lb. GVW, 75,000-lb. GCW, single-axle trucks up to 36,000-lb. GVW, 65,000-lb. GCW.

NEW! Three all-new engines—*401* cu. in. V-8 develops 226 hp., 350 lbs.-ft. torque . . . *477* cu. in. V-8 develops 260 hp., 430 lbs.-ft. torque . . . *534* cu. in. V-8 develops 277 hp., 490 lbs.-ft. torque.

NEW! Water-jacketed induction system contributes to maximum power output with excellent economy by providing more positive temperature control of fuel-air mixtures.

NEW! Fully machined combustion chambers and Turbulence-top pistons provide more accurate compression control and greater fuel-air turbulence, for top performance with regular grade fuel.

NEW! Submerged-type electric fuel pump virtually eliminates vapor lock. Pump delivers only solid fuel, always under pressure, operates independently of engine speed.

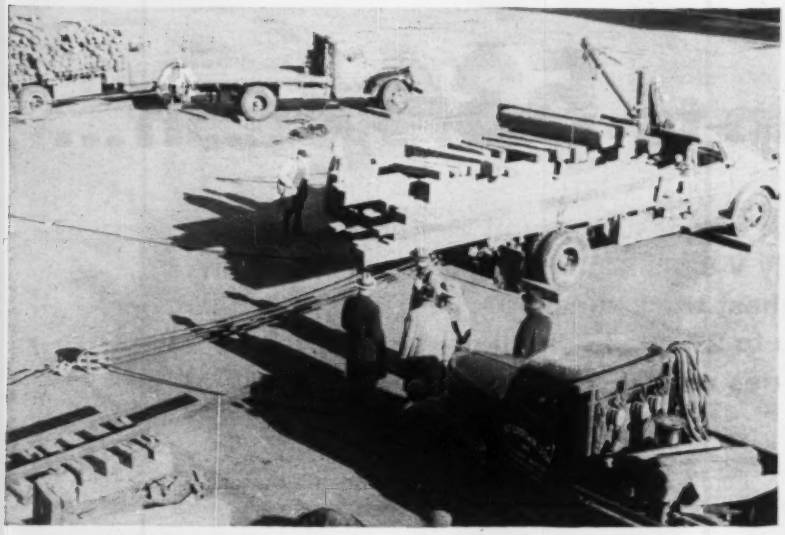
NEW! Valve seat inserts for intake as well as exhaust valves. Intake valves are hard-faced dished-type. Exhaust valves are sodium-cooled, faced with tungsten-cobalt.

NEW! Three-stage cooling system with separate temperature control for block and head, shortens engine warm-up time.

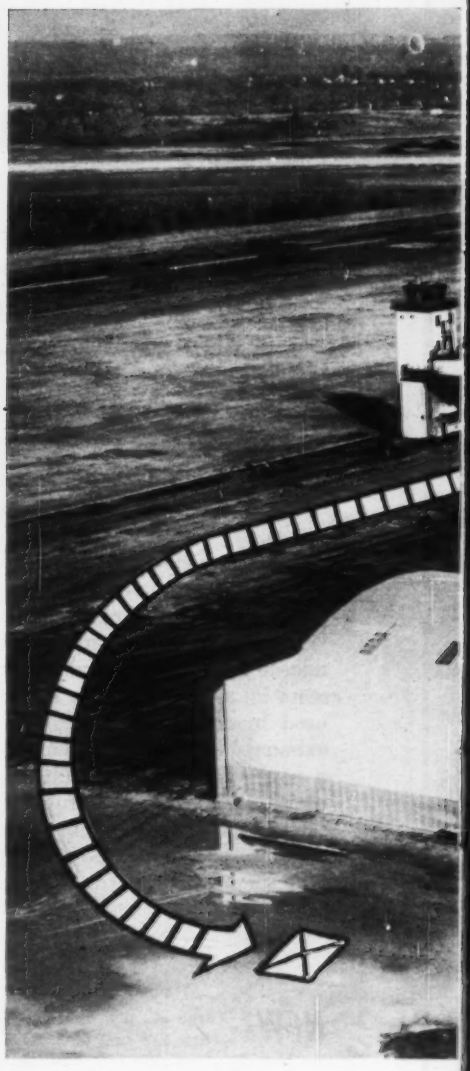
Big truck built...
Big truck powered...
At Ford's low prices!

FORD TRUCKS COST LESS

LESS TO OWN... LESS TO RUN...
LAST LONGER, TOO!



Two light trucks loaded to act as deadmen, two others with powerful winches, some old trolley rails, rope and wood blocks—plus a canny New Englander's know-how—are prime movers in shifting a full-sized, 660 ton hangar more than ¾ mile to a new location.



SIZE OF THE JOB is apparent in air view of Bedford, Mass., airbase. Huge hangar (center foreground) was halfway along the ¾ mile route (dotted line) to its new base (at bottom).

Huge Hangar Moves Over to Start

Probably one of the biggest moving jobs in U.S. history is nearly completed now, at Bedford, Mass., 18 miles northwest of Boston.

A standard World War II Air Force hangar—214 ft long, 162½ ft. wide, plus a three-story leanto on one side and a two-story leanto on the other, and including a 73-ft-high control tower—has been inched along for more than three-quarters of a mile to new foundations and a new use.

The 660 ton structure has been moved complete—with all its piping, wiring, plumbing, windowpanes, doors, light fixtures and even screens. Motive power has been two winches mounted on a pair of three-ton trucks.

Not a pane of glass has been cracked.

Total cost—including purchase price of the structure, moving, and rehabilitation—will be about $250,000. (With a planned 1,000 ft extension of a taxiway, corrective grading for an area that will involve about 500,000 cu yd of grading, construction of two aprons capable of holding B47, B52 and B58 bombers, an athletic field, parking area and access road, and a new central heating plant, the gross construction cost will run up to about $600,000.) For this price, East Coast Aviation, Inc., will have obtained 51,000 sq ft of new space for its school and service facilities; the State of Massachusetts will have added value of buildings on the airport (occupied in part by East Coast under lease); and the U.S. Air Force has cleared the center of the airfield for expansion of its jet runways.

• **Behind the story**—The action revolves around two men:

D. F. Donovan, a rapid acting contractor of Braintree, Mass. who does earthmoving and general construction work as Donovan & Son, and who has a novel idea for selling packaged airports under the name of Massachusetts Airport Properties, Inc.

B. F. Goodwin, an octogenarian contractor of Marblehead, who has been moving things of all sizes and shapes for some 65 years.

Boston Globe Photo

New Life

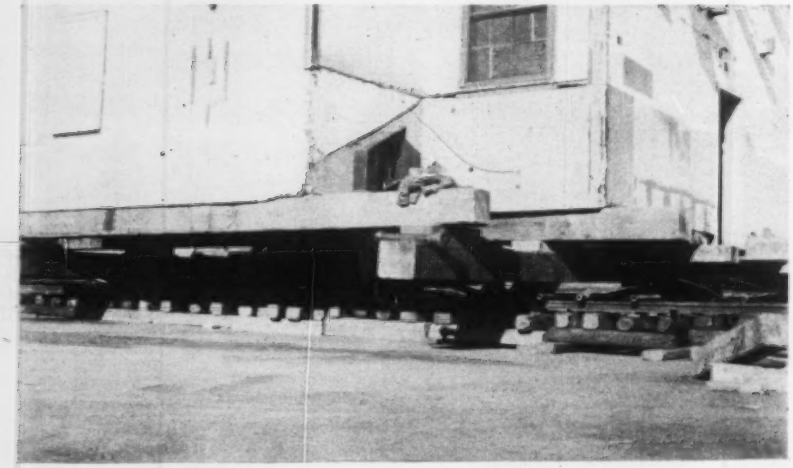
The scene is L. G. Hanscom Field which is owned by the state and is a busy airport in its own right as a satellite of Boston's huge Logan Airport and for service to numerous privately owned aircraft. The field is also the site of the Air Force's Cambridge Research Facility and the base for a jet fighter squadron.

As an indicator of how busy the airfield is, the monthly log shows an average of more than 12,000 landings and takeoffs—about 7,000 by military, the rest by civilian craft.

First purchased by the state in 1940, the field has been under constant military use since 1941—first under a five-year lease, later under a longer-term agreement under which the state retains

GAGES—Strings of 2 x 12 planks, suspended by wires from hangar roof, serve contractor as gages on operation. If they buckle, sidewalls are getting too close together.

. . . Moving hangar saved time and money



SLEDS of sheet steel, riding on solid pin rollers and in turn on old trolley rails, ease building along under pull of the winches.

title to the major part of the more than 1,100 acres now included, but all field maintenance and repair is done by the Air Force. Under this latter agreement, the service wants to widen the aprons on the two concrete runways (one 7,000 ft and one 5,500 ft in length).

The hangar now being moved is one of two which stood in the way of the widening project. The other hangar—a somewhat smaller structure—was sold to a contractor who dismantled it board by board, sold it and re-erected it (reportedly at a considerable loss).

Thus when this hangar was to be removed, there were virtually no bidders on it and the Air Force was considering demolishing it.

At this point, Donovan stepped in. He bought the structure for $100, and promised to get it out of the Air Force's way immediately. Then, he turned to John T. Griffin, president and founder of East Coast Airways, and sold him the structure, on condition that Donovan move it, and prepare the site to receive it.

East Coast—which runs schools for aviation mechanics, sells and services private aircraft, holds experimental contracts with the armed services and does some contract flying—figured it had a good bargain. Says Griffin: A new hangar providing that much shop and office space would cost perhaps $600,000 by itself, without figuring in other construction.

• **To work**—The agreement made, Donovan's next move was to bring Goodwin to the scene. And Mr. Goodwin decided the job could be done, despite the fact that he would have to move a building which is open at both ends, with its side-walls and offices all hung from the roof during the moving operation.

The structure is entirely of built-up wood trusses and built-up columns bolted together. The trusses carrying the main roof are of 120 ft spans, 12 ft deep at the midpoint, set 16 ft on centers. These rested on a total of 28 built-up columns which in turn were tied into a concrete spread footing. Clear height in the hangar area is 28 ft.

Here's how it was done:

First step for Goodwin was to break out the concrete around the ties, and cut all connections. Next, 16 x 16 in. timbers, 26 ft long, were placed at the truss points, and the whole structure raised off the ground about 18 inches.

Then other 16 x 16 in. timbers (of prime British Columbia fir) were slipped under the building's columns, lengthwise, so that they acted as needle beams. Four lines of such timbers now carried the building columns longitudinally.

Then the whole structure was jacked up about 3 ft so that a heavy cribbing timber "roadbed" could be put down. On this cribbing, old trolley rails were laid (not fastened in any way to the cribbing); and a series of 56 steel "sleds"—each 6 ft long and 12 in. wide—were placed under the columns. These sleds, in turn, ride on 3 in. solid steel rollers on the tracks.

(Mr. Goodwin, incidentally, prefers to use trolley-car rails to standard railroad track for this purpose. Has more "give" to it, he says.)

To connect the two sides of the building during the move—and to provide even points of pressure during the pulling operation, Goodwin now strung 18 cables, $\frac{7}{8}$ in. in dia, from side to side across the area where the floor once had been. These cables were attached at four places—at each point where they crossed one of the longitudinal beams now carrying the structure.

As a further precaution, double lines of 2 x 12 in. planks, butted end to end and suspended by light wires were strung across the hangar area. Purpose of these planks was purely to serve the Goodwin men as gages—if the planks began to buckle, the pull was uneven, and the two sides of the structure were too close together for safety.

Actual pull was exerted on the building through steel cable loops, attached to the outside longitudinal beam, which thus could pick up the entire system of the 18 cross-connected cables.

Goodwin actually used four trucks—two of which served as deadmen, the other two—mounting winches—doing the pulling. A series of four four-sheave blocks were interconnected with a single hemp rope, reeved through in such a way that either of the winches could take advantage of the full multiplication of power through the blocks—Mr. Goodwin estimates that he can multiply the power of either winch by from 12 to 15 times.

Once the track and supporting cribbing had been set up (with carpenters' levels and no other instruments), the winches set to work, the building was moved as much as 300 ft in a day.

Meanwhile, Donovan's own forces prepared the new foundation (spread footings) to receive the structure.

Joseph L. Paley, of Boston, is general consultant to Donovan and East Coast Aviation on the moving program; Joseph S. Adams, airport engineer for the Massachusetts State Airport Management Board, is supervising the job for the state, under Edward McGrath, Commissioner.

• **Airports to order**—Encouraged by the success of this venture, Donovan's Massachusetts Airport Properties, Inc., has meanwhile, purchased six other unused wood hangars of varying size and now has them in "cold storage" waiting to be delivered and re-erected "anywhere that's reasonable"—even if the delivery should mean a relatively long move by water.

The contractor's idea is that a major metropolitan area like Boston has need for far more airport facilities than are now available at publicly-owned installations such as Logan or Bedford. Executive, commercial freight and private fliers, he contends, need smaller fields located near the factories or headquarters offices and not subject to the restrictions of great municipal airports. Such a factory-office belt now is growing up rapidly along Route 128, which circles the perimeter of Boston's metropolitan area.

Using his used hangars as a base, Donovan plans to offer complete service for building, equipping and even operating such small airports—to order.

James "Pepper" Cunningham, partner, A. J. Cunningham & Sons of Trenton, New Jersey, found the speed of paving by the PF-90 one and one-half times faster, with less downtime, minimum maintenance costs.

"Everything about the Blaw-Knox unit has been engineered for speed"

That's how James "Pepper" Cunningham feels about his 12-foot Blaw-Knox PF-90 Paver. The former stock car and midget auto racing champion says the maneuverability and speed of the PF-90 helped his crew maintain schedules in spite of two-way continuous traffic while resurfacing 3100 feet of Parkway Avenue, a heavily-travelled artery in Trenton, New Jersey.

Rubber tires on the PF-90 were a big time-saver. They made it possible to get back and run a new lane faster. Levelling was changed instantly in the case of a small dip. The operator adjusted the depth of the binder instantly instead of a 10-foot run experienced with a previous machine before repositioning. In addition the two-speed tamper made it possible to match tamping to travel speed.

Big capacity fuel tanks for the screed heater and engine helped to keep the PF-90 operating for 10 hours without refuelling stops. The screed heater got underway faster, heating the binder to 300°F. in 15 minutes. Simple, easy to operate controls, independent for each operation, made for higher rates of production. Mr. Cunningham says this is equivalent to saving lots of downtime, especially in city paving operations.

In three months the Cunningham organization experienced no downtime, and only one hour each day was required for lubrication and refuelling. Outstanding performance and speed from high capacity machines like the PF-90 can help build your profits. Your Blaw-Knox Distributor has all the details. Why not check with him soon?

BLAW-KNOX

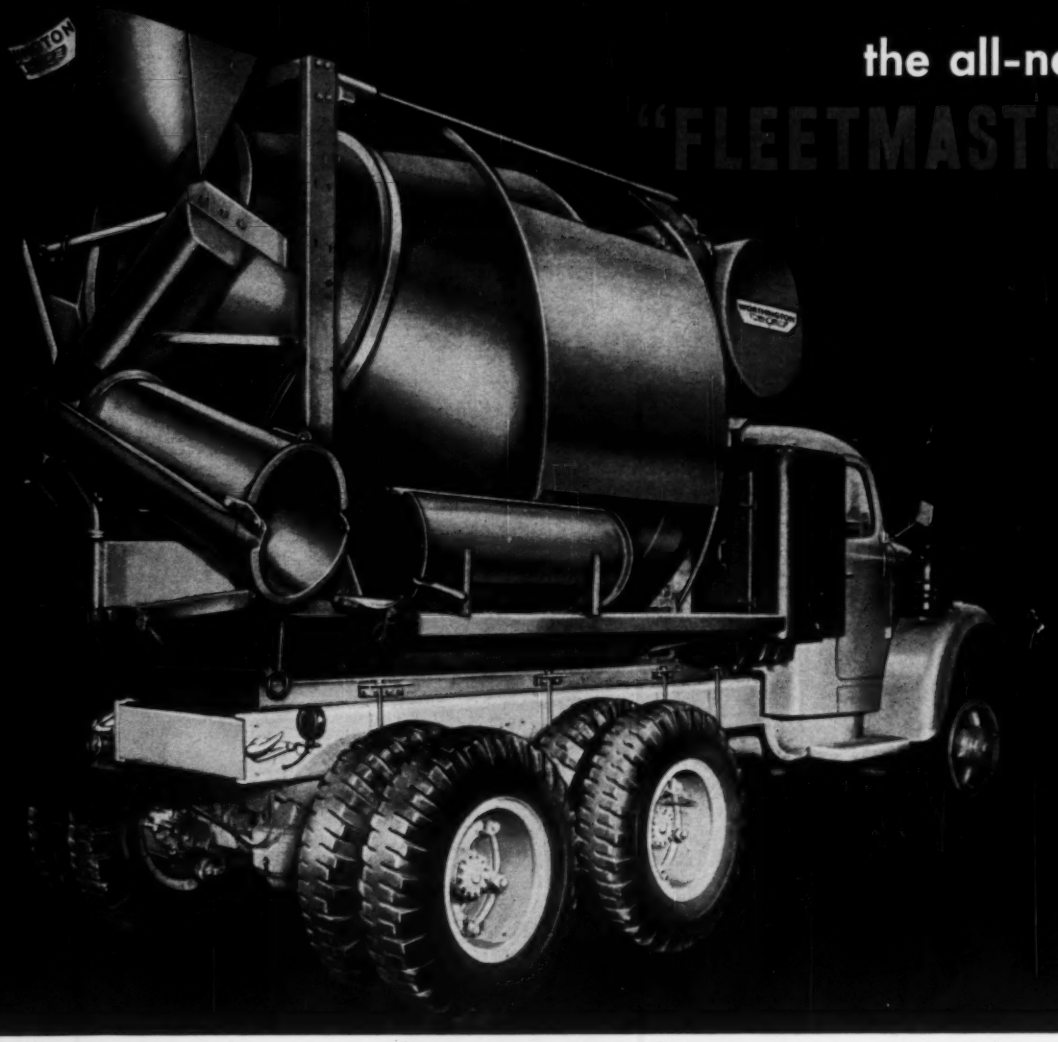
BLAW-KNOX COMPANY

Construction Equipment Division

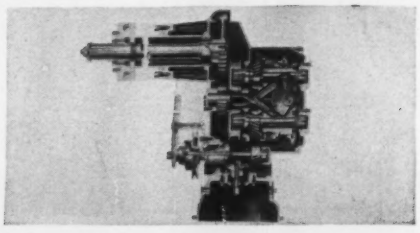
41 Charleston Avenue, Mattoon, Illinois

ANNOUNCING...world-renowned Worthington truck

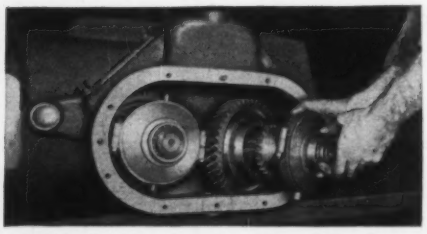
the all-new "FLEETMASTER"



TWO ALL-NEW WORTHINGTON



FLEETMASTER TRANSMISSION. The all-new Worthington designed and manufactured multi-disc transmission used in the 1958 Fleetmaster truck mixer.



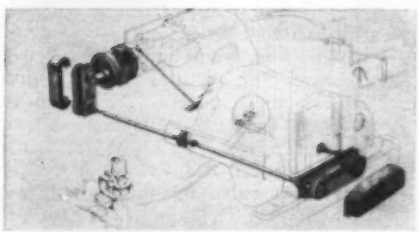
FLEETBUILDER TRANSMISSION. The all-new Worthington designed and manufactured sliding gear transmission used in the 1958 Fleetbuilder truck mixer.

mixer efficiency and economy...at a new low price!

the all-new

"FLEETBUILDER"

HEAVY DUTY TRUCK MIXERS



FRONT END POWER TAKE-OFF. The all-new Worthington manufactured front end power take-off is available on both the 1958 Fleetmaster and Fleetbuilder units.

Now at your local Worthington distributor. Ask for a "Mixerama" demonstration of the new Fleetmaster and Fleetbuilder lines in action. For the name of your nearest Worthington distributor, write to Section 65-6, Worthington Corp., Harrison, N. J. In Canada, Worthington, Ltd., Brantford, Ont.

WORTHINGTON

Prestressed Bridge Girders Span 151 Ft

Prof. T. Y. Lin
University of California
Berkeley, Calif.

A continuous prestressed concrete bridge with two 151 ft spans has just been completed in California. While much longer continuous spans (up to 353 ft) have been built in Europe and South America, engineers in the U.S. have devoted their efforts largely to the design and construction of shorter simple spans.

General opinion is that cost of long-span continuous prestressed concrete bridges might not be as economical as conventional designs using structural steel. But the bidding and the successful completion of this bridge across the Feather River at Marysville, Calif., indicated that this type of prestressed concrete bridge can be competitive.

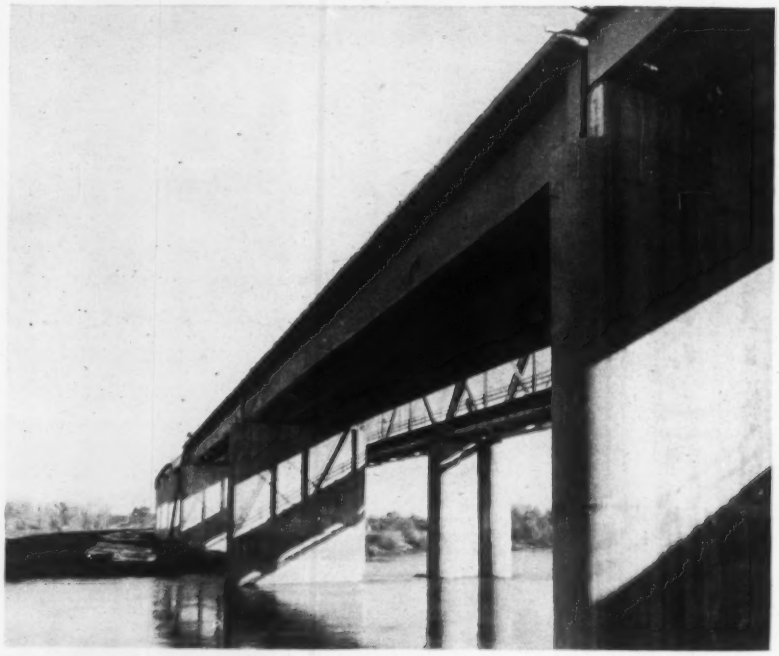
The designers used materials and concepts to suit the U.S. construction industry. This was perhaps the key to the economy of the bridge.

A total of nly thirty-two 1⅛ in. strands (each 300 ft long) was employed for prestressing the two continuous spans. These cables, supplied by John A. Roebling's Sons Corp., were easily laid, tensioned, and grouted. Simple T sections, instead of modified T or box sections, were adopted for the bridge, thus minimizing the cost of formwork and facilitating the placing of concrete.

In addition to the two main spans, the two-lane bridge has 23 spans of 80 ft precast, prestressed concrete T-beams. Roadway width for the two-lane structure is 28 ft and sidewalks increase the width between railings to 35 ft 5 in.

The four cast-in-place T-girders for the continuous spans are spaced 9 ft c-c and are 7 ft deep. The 8 in. thick deck forms the flange of the T section. Stem width is 14 in., thickened to 2 ft at the end of each girder and over the center support. Stem and deck joints are chamferred 6 in. Cables are spaced 4½ in. at midspan and over the central support and 12½ in. at the end anchorages.

• **Steel design figured**—Two alternate designs were made for the main spans. One involved simple-span structural steel girders, utilizing composite action. The other called for continuous prestressed concrete. Due to the unbalaneing of the individual items in the bids, the cost of the two main spans in the seven bids received varied from $114,000 to $192,500 for the steel design, and from $75,000 to $194,500 for the prestressed concrete design.



PRESTRESSED CONCRETE BRIDGE across Feather River at Marysville, Calif., has two unusually long continuous girder spans.

A fair comparison of the cost of the two designs is made as follows:

Steel Bridge	
Concrete deck—290 cu yd at $70	$20,300
Reinforcing steel—43,000 lb at $0.13	6,240
Structural steel—511,000 lb at $0.22	112,420
Painting steel	8,000
Falsework	16,000
Total	$162,960
Prestressed Concrete Bridge	
Concrete, including form work—690 cu yd at $75	$51,750
Reinforcing bars—95,000 lb at $0.13	12,350
Roebling cables and anchorages	29,500
Placing jacking and grouting cables	12,000
Falsework	30,000
Total	$135,600

• **Unit costs compared**—Based on the above, the steel design would cost $15 per sq ft, while the prestressed concrete design cost $12.50 per sq ft. Although this sizable difference may not be realized in other cases, the basic economy of the prestressed design here is self-evident. And it is believed that additional experience with this type would result in lower costs.

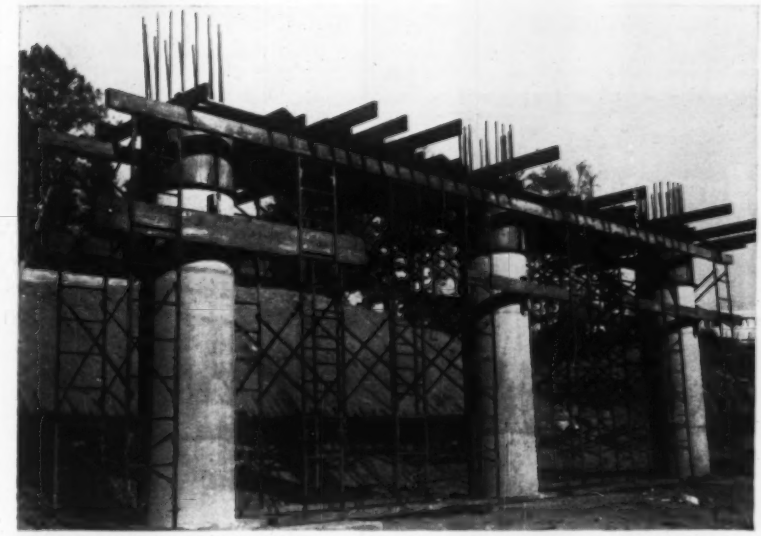
Concrete strength used was 5,000 psi. Tensioning operations started after the entire deck structure had been cast when the concrete attained a strength of 3,500 psi.

Cables were prestressed from both ends of the double span simultaneously to minimize possible friction losses. Net effective stress after losses was 208,000 lb per cable. To prevent horizontal displacement, only two cables were stressed in each girder at a time. Then, two cables in each of the other girders were stressed. This process was repeated until all eight cables in each of the four girders were tensioned.

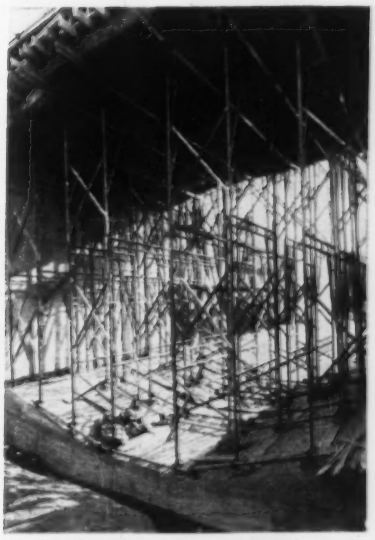
The girders are fixed at the center support. At the stressing ends, the girders are supported on steel rocker arms that were displaced before stressing to accommodate shrinkage, elastic deformation and creep.

• **Capable of overload**—A study of the ultimate-load capacity of the bridge revealed the unusually high strength of the structure. The study showed that an overload of 11 times the live load plus impact would be required to completely rupture the bridge, which was designed for H20-S16-44 loading.

The bridge was designed by Ben C. Gerwick, Inc., with William J. Talbot, Jr., as chief engineer. T. Y. Lin and Associates were consultants on the continuous spans. E. E. Watkins, road commissioner of Sutter County, Calif., was responsible for the project, with Charles W. Deterding in charge. Pacific Bridge Co. was general contractor under a $1,421,700 contract.

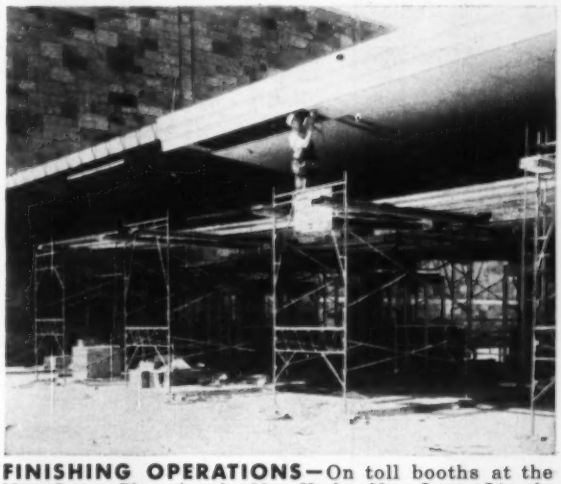


QUICK PIER BEAM SUPPORT—"Trouble Saver" 2'-wide Ladder Scaffold frames spaced 5' apart help contractor, M.D.A. Construction Co. provide easy access for forming work and support for one of 20 bridge piers on the Cross-Westchester Expressway, White Plains, N.Y. This photo shows forming and support for a pier beam 42" x 48" deep, 14' high. Many users of "Trouble Saver" Shoring say "its ease of handling means quicker job completion." Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that *sell* or *rent* "Gold Medal" Scaffolds.



CONFORMING TO CURVES—Guy F. Atkinson Co., contractor, uses "Trouble Saver" Shoring to support Pacific Electric Ry. Co. concrete bridge, Los Angeles, over a sloped concrete channel base. Adjustable legs help meet both curves, top and bottom. Note 4" steel I-beams as stringers, furnished by PS Co.

Shoring Methods . . . for Highway Construction by The Patent Scaffolding Co., Inc.



FINISHING OPERATIONS—On toll booths at the New Jersey Plaza for the New York—New Jersey Lincoln Tunnel these "Trouble Saver" fixed Scaffolds are used to provide safe, level platforms for finishing work. The scaffolding components used here are the same as those used for shoring operations. By assembling them in towers and spacing to take the load, practically any shoring job can be done.

EASILY HANDLED BRIDGE SHORING—5'-wide prefab "Trouble Saver" Sectional Steel Shoring frames are handled easily by the crew for T. M. Page and RCT Corp., joint venturers, to obtain the correct support for the Cajon Blvd. Bridge over Devil's Creek Diversion Channel, San Bernadino, Calif. Two 6'6"-high frames, with extension legs, give 14' height. 4" steel I-beams used as stringers. 3'7" spacing between frames.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

GOLD MEDAL LADDER SCAFFOLDING

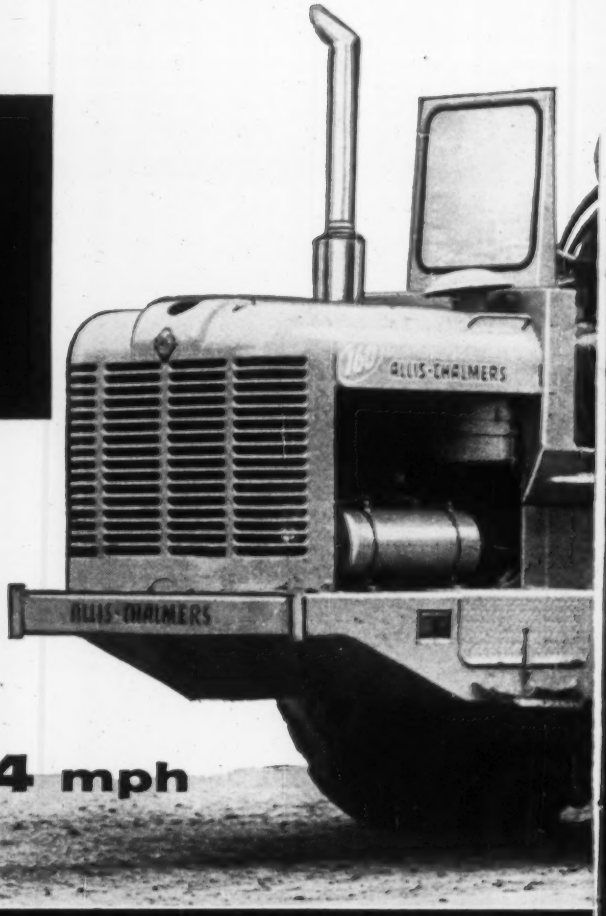
THE PATENT SCAFFOLDING CO., Inc.

®

38-21 12th Street Dept. ENR, Long Island City 1, N. Y.
West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.
***In Canada*: 355 Dufferin St., Toronto**
Branches in all principal cities

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

Allis-Chalmers
TS-160



7 yd struck

9.5 yd heaped

155 horsepower

5 speeds to 25.4 mph

12-ton payload

Measure these advantages for

22 hp per struck yard—Big Allis-Chalmers supercharged diesel engine delivers extra lugging ability for tough pulls, fast loading. Versatile TS-160 can team up with big equipment or work alone on long- or short-haul construction jobs—handle a wide range of utility jobs, travel at speeds up to 25.4 mph.

Measure these features . . . Allis-Chalmers 516-cu-in. diesel engine—dependable power at all working speeds • Independent, constant live hydraulic power for steering and scraper operation • Low, wide bowl—8-ft, 1½-in. cutting edge . . . 3-piece, interchangeable cutting edges . . . double-acting hydraulic bowl lift jacks • Positive hydraulic ejection, high apron lift to full 7-ft, 1½-in. opening • Roomy operator's compartment, easy-to-reach controls, 24-volt direct electric starting, adjustable bucket-type seat, synchronized 4-wheel air brakes • Big push block for all types of pushers.

a wide range of earth-moving jobs...

Turns non-stop in less than 25 ft with 90-degree hydraulic steering ... easy maneuverability in narrow cuts, faster cycles without reversing in tight turn-arounds.

Moves quickly from job to job ... when required, transport wheels are available to meet legal load limits for highway travel.

ALLIS-CHALMERS CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Making Mighty Dams From Rugged Granite Mountains

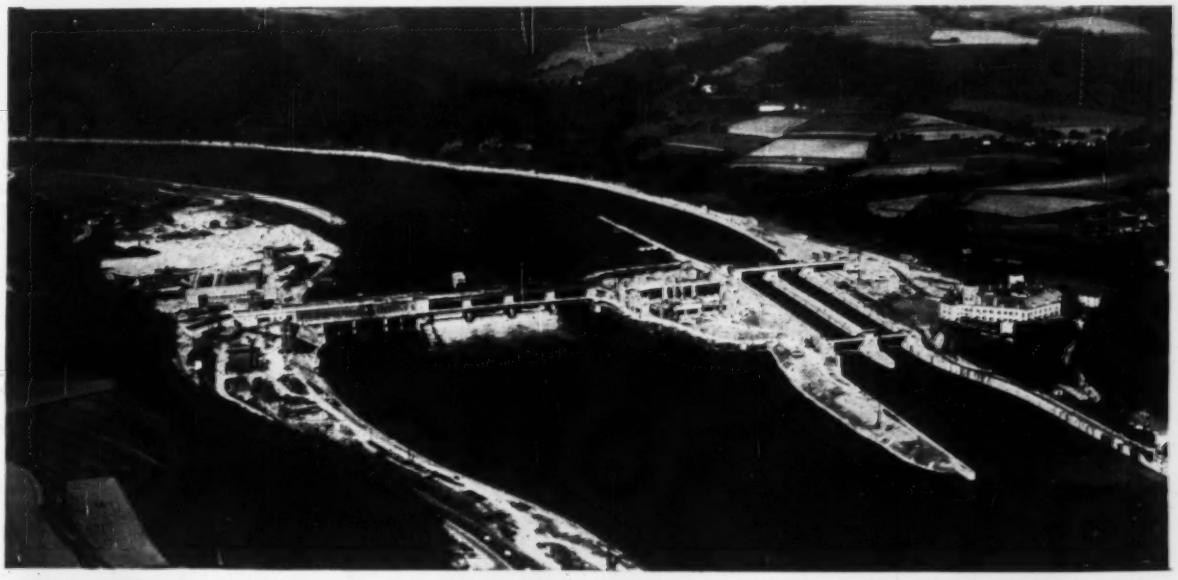
Construction of a series of power company dams in North Carolina required excavation in several granite mountains. This 4-yard Marion 111-M shovel produced a big daily output even in the most difficult digging—making it a logical companion for today's big haulage units.

Marion 43-M hoe speeds completion of a new sewer line. The 1-yard machine digs to a maximum depth of 26 feet. Like every machine in Marion's extensive line, the 43-M is built for fast, efficient, heavy-duty work.

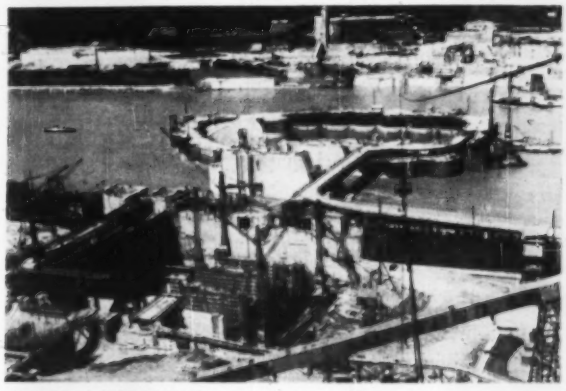
MARION

MARION POWER SHOVEL COMPANY—MARION, OHIO, U. S. A.

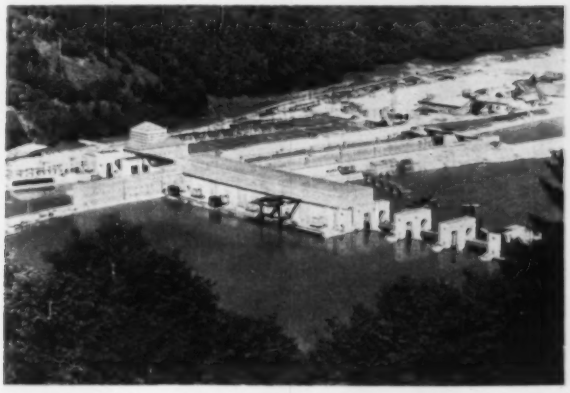
A Division of Universal Marion Corporation



YBBS-PERSENBEUG scheme is second to be completed on Austrian Danube River. Its two powerhouses have 190,000 kw capacity. Across river from right bank (at left in photo) are south powerhouse, 590 ft spillway, north powerhouse and twin locks.



ISLAND COFFERDAM was required at Ybbs-Persenbeug to keep river open to navigation during construction.



JOCHENSTEIN development, shown from upstream, was first completed. It has 140,000 kw capacity and 33 ft head.

Power Dams on the Gentle Danube

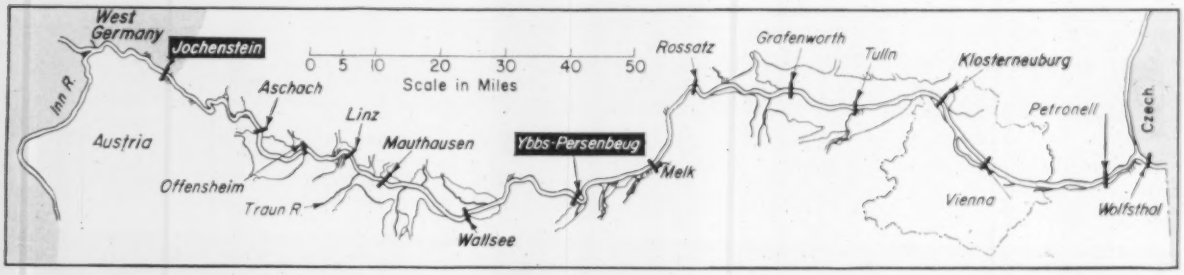
The second of a planned series of 15 power structures on the Austrian reach of the historic Danube River recently was placed in operation.

Those not aware of this program will perhaps be surprised, for the gentle Danube is somewhat comparable to the mainstem Ohio and Mississippi Rivers in the U.S. All are relatively wide rivers suitable for navigation but not generally susceptible to development for power.

However, the Austrians apparently have found development of the not inconsiderable power potential of their reach of the Danube worthwhile. The Austrian Danube is 213 miles long and drops a total of 492 ft. Its average flow is 70,000 cfs. Therefore, it has a potential of 14 billion kwh annually. Essential data of the overall plan are contained in the accompanying table and map (see page 74).

Austrian engineers actually had conceived some of these projects before World War I but it was not until after the second world war that a multination Danube Committee was established to plan integrated development of the entire Danube, and particularly the Austrian stretch, a very short portion of which is shared with West Germany.

In 1952, the Germans and Austrians started joint development of the Jochenstein project and completed it in 1956.



ULTIMATE POWER DEVELOPMENT of 213 mile Austrian Danube comprises 15 dams harnessing a total drop of 492 ft.

Just about everything connected with the project was shared equally—including cost, orders for machinery and materials, construction crew, operational staff and energy output.

The Jochenstein works consist of a 572 ft long gated spillway across the river (393 ft of free opening) a 140,000 kw powerhouse that is 525 ft long, and two locks 754 ft long and 79 ft wide.

Five 39,400 hp Kaplan turbines, each of which can utilize 12,400 cfs, are installed in the powerhouse. River flow to the turbine scroll cases is controlled by stop logs which are operated by the 100 ton gantry crane seen in an accompanying photo.

A very important subsidiary benefit of the Jochenstein project—and of all the other Danube projects—is improvement of navigation conditions.

• **Current project**—The project recently placed in service is Ybbs-Persenbeug. Construction was begun first during World War II but was discontinued at an early stage. After the war, the Russian occupation delayed resumption of work until 1953 when the Soviet Union finally released the site.

Ybbs-Persenbeug differs somewhat from Jochenstein in that the powerhouse has been split. Going across the river from the left (north) bank, there are two 79x754 ft long locks, the 360 ft long north powerhouse containing three 43,900 hp Kaplan turbines, a 590 ft spillway and the southern powerhouse which is nearly identical to the northern unit.

Each of the Kaplans utilizes 12,400 cfs of water at full gate. Only the southern powerhouse is in service; the northern power units are to be completed in early 1959.

The Ybbs-Persenbeug work is being financed in part by a $21 million loan from the International Bank for Reconstruction and Development (World Bank). Total project cost is estimated at $93 million, which, based on 190,000 kw total capability, breaks down to a capital cost of $490 per kw. However, a portion of this seemingly high cost includes navigation locks and other smaller works in the reservoir which are not necessary for power production.

Austria's most urgent need is power capacity during winter months. New loads will have to be developed if summer energy available is to be used optimumly.

No firm plans have been laid to begin any of the other 13 Austrian Danube projects. It is probable that these will be contingent upon attracting new industry, particularly large power-consuming metallurgical refineries.

An organization known as Osterreichische Donaukraftwerke A.G., formed for the purpose, is carrying out the Ybbs-Persenbeug scheme. Information for this article was furnished by E. Konigshofer, Osterreichische Elektrizitats Wirtschafts-Aktiengesellschaft, Vienna.

Planned Development of Austrian Danube

Stage	Head (ft)	Yearly Average Waterflow (Cu ft per sec)	Capacity (kw)	Production (000,000 kwh)
Jochenstein	33	61,700	140,000	940
Aschach	50	61,700	217,000	1,329
Ottensheim	28	61,700	120,000	750
Linz	19	61,700	80,000	507
Mauthausen	20	63,500	90,000	574
Wallsee	30	70,500	147,000	992
Ybbs-Persenbeug	36	74,000	189,300	1,252*
Melk	27	76,000	136,500	907
Rossatz	25	76,000	126,000	838
Grafenworth	35	76,000	181,600	1,203
Tulln	27	79,500	142,500	952
Klosterneuburg	33	81,000	181,300	1,206
Wien	25	77,500	102,000	636
Petronell	34	81,000	153,000	1,280
Wolfsthal	33	84,600	192,000	1,330
Total			2,198,200	14,696

* In normal water year, about 43% of power will be generated during winter.

Canadian Superhighway Is Proceeding on Schedule

Construction of the Montreal-Laurentian Autoroute, to handle heavy tourist traffic to the resort area north of Montreal, is progressing on schedule, according to Ernest Gohier, chairman of the Autoroute Board.

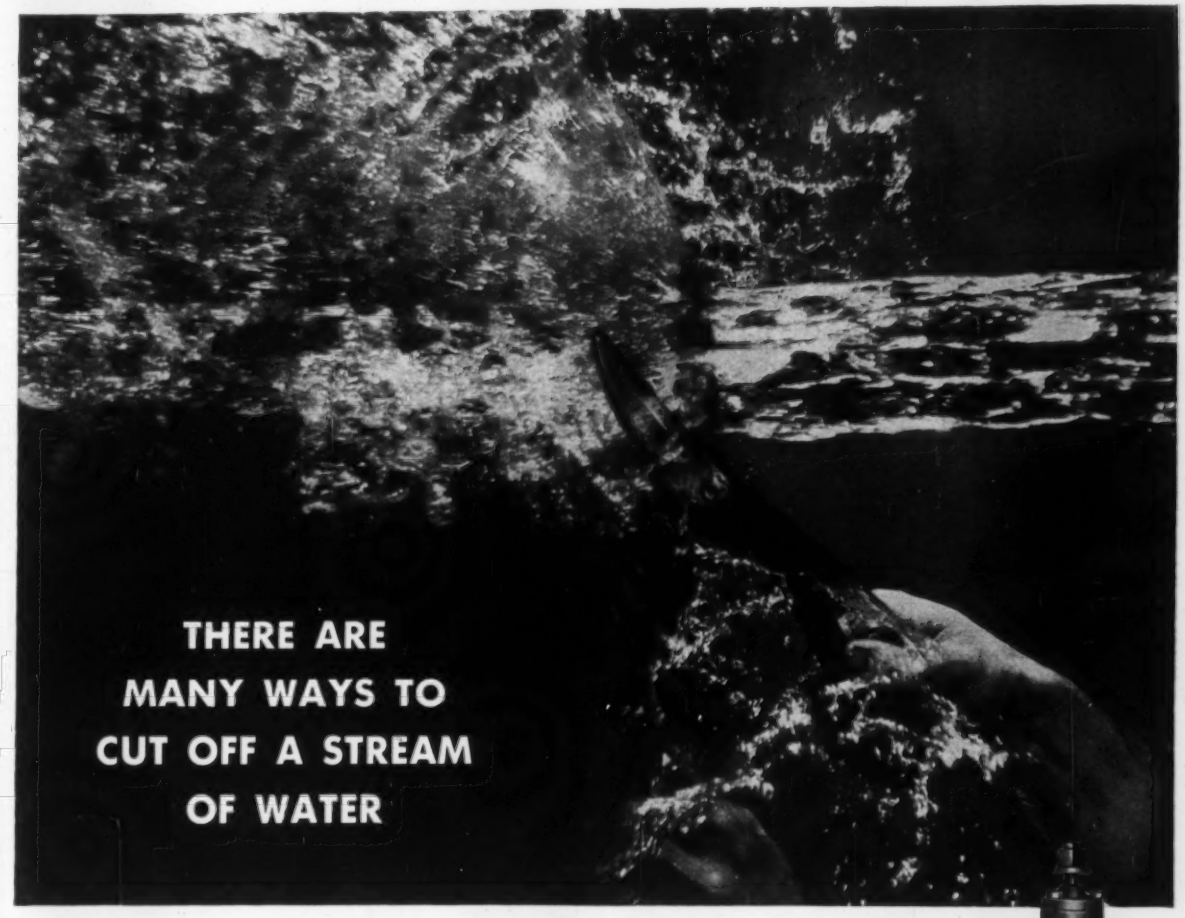
The $20 million section between Cote Vertu, on the Island of Montreal, and Ste. Rose is expected to be open to traffic by October of this year. This work has been pushed, Mr. Gohier said, so that traffic jams at Cartierville and Ahuntsic bridges can be eliminated.

Meanwhile, work is continuing on the Bordeaux Bridge over the River of Prairies, and 500 men are at work on grubbing and clearing of brush in the section between Laval-des-Rapides and St. Jerome. Construction of piers and abutments for two bridges across the North River at St. Jerome will be completed this winter.

Lima to Finance Airport by Subdividing Original Site

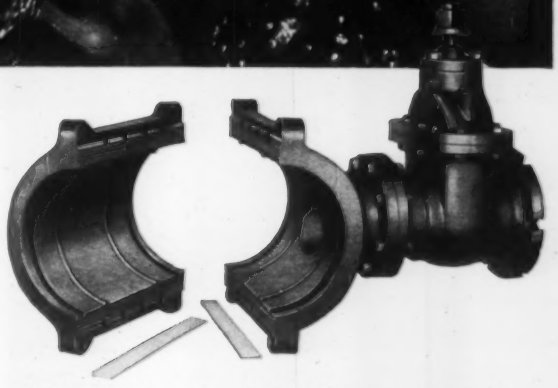
The Peruvian government has bought about 1,000 acres of land north of the port of Callao, near Lima, for development of a jet-age airport to replace the present Limatambo field.

While the new airport will be seven miles from Lima's business center (the present one is only 3½ miles away), the added space is needed for longer runways. New runways will be about 3,600 yd long, compared to the existing 2,000 yd ones at Limatambo—and the new ones will allow approach and take-off over the Pacific Ocean, avoiding the present hazards of the Andean foot-



THE BEST WAY IS WITH LUDLOW AND RENSSELAER GATE VALVES!

Because Ludlow gate valves and Rensselaer gate valves assure *ease of operation, watertight closure and years of trouble-free performance.*



Combining simplicity and soundness of design with high quality workmanship, Ludlow and Rensselaer gate valves meet all the requirements of exacting engineers and water superintendents — and exceed A.W.W.A. specifications.

Ludlow and Rensselaer double disc gate valves offer the most complete selection of outstanding design features available today, plus custom design engineering for special applications. Sizes range from 2" to 72"

WRITE TODAY
for the L&R
Gate Valve Catalogs

BRANCHLINE CONNECTIONS TO MAIN LINES UNDER PRESSURE are made easier and more dependable by Ludlow and Rensselaer tapping sleeves and valves.

LUDLOW & RENSSELAER

VALVES & HYDRANTS

THE LUDLOW VALVE MANUFACTURING CO., INC., TROY, N. Y.—SINCE 1861

Multiply Power... Cushioning Shock

This National Torque Converter improves performance of this Lima Dragline!

Owned and operated by J. Robert Bazley Inc., of Pottsville, Pa., this dragline is stripping overburden at St. Clair, Pa.

The rocky character of the overburden, apparent in the picture, causes a lot of stress and strain during operation, and puts rapidly varying loads on the engine.

The National Torque Converter automatically "tailors" the power delivered to each load condition. When the bucket stalls, speed decreases, and torque is multiplied. As soon as resistance drops, torque decreases, and speed increases. In all phases of operations, stresses are absorbed within the Converter, easing the shocks on both equipment and operator.

National Torque Converters are manufactured with or without integral cooling systems.

If you build or operate any heavy equipment, powered between 100 and 1000 hp, National Torque Converters will help to improve performance and increase life. Write:

THE NATIONAL SUPPLY COMPANY

INDUSTRIAL PRODUCTS DIVISION

Two Gateway Center, Pittsburgh 22, Pa.

Pace-setters in the progress of industrial power transmission

hills. The climate at the new site also is expected to be more favorable to give a higher prevailing ceiling.

Completion of the Callao airport is set for late 1960. Cost of the project is estimated at from $8 million to $8.5 million.

Key to financing the plan is to subdivide about 1 million sq yd of land at the existing site into about 1,800 residential lots. Income from the sale of subdivided land is estimated at about $10 million, which would enable the airport transfer to be carried out at a profit. The present terminal, completed 10 years ago will remain to serve as the Ministry of Aeronautics building.

March 31 Bid Deadline Set For Buenos Aires Subway

Buenos Aires' public transportation system has invited bids for construction of an 0.8 miles stretch of subway. An official budget of $2.5 million has been announced for the project, which will run between Boedo and Ave. La Plata. Deadline for the bids is March 21.

In connection with this construction, a tender already has been opened for purchase of 20 subway cars for $1.5 million. The cars would be the first of 60 units most urgently needed by the subway system. Long-range plans call for acquiring 200 additional cars, which would be needed with the expansion of the system as recommended by the "Condor Plan." This plan, worked out recently by the Permanent Commission for Subway Expansion, would extend the existing 18.6 mile subway system some 90 miles at an estimated cost of $360 million.

Argentine Highway Work Will Cost $83 Million

Some $83 million worth of Argentine highway construction bids will go out during the first six months of 1958, according to the country's National Highway Commission.

Bringing the country's neglected road system up to date will require about $111 million each year to improve roadbeds and paved roadways, and to pave about 1,860 miles of highway, according to the commission.

In 1957, commission spokesmen reported, nearly $40 million was spent to start work on 620 miles of highways and bridges. During the same year, $6.6 million of highway construction was completed, and $111 million worth (2,100 miles of road) was under construction by the end of the year.

Out of Argentina's road network of 37,200 miles, only 5,200 miles are paved and 4,900 miles are earth paved.

standardize on

MUELLER®

AWWA fire hydrants and gate valves

For assured dependability, standardize on Mueller AWWA Fire Hydrants and Gate Valves for municipal, industrial and private fire protection and water supply systems. Precision-engineered, these products equal or exceed the exacting specifications of the American Water Works Association.

MUELLER CO.
DECATUR, ILL.

AWWA Improved Fire Hydrants

Bronze Weather Cap — prevents freezing of operating nut and eliminates tampering.

Individual Non-kinking Chains — no interference with other caps.

Fluted Design—ribs add strength at flanged joints.

Concealed Flanges—keep out dirt and improve appearance.

Brilliant Enamel Finish—aids recognition and resists weather.

Pitch Tar Varnish Finish—resists corrosion below ground.

Tapered Lower Barrel — prevents frost heave.

AWWA Gate Valve

Heavy Cast Iron Body — ample strength to withstand pipe movement.

Pitch Tar Varnish Finish — resists corrosion.

Cadmium Plated Bolts and Nuts — give greater resistance to corrosion.

Fully Bronze Mounted — reduces wear and corrosion.

Parallel Seat—Double Disc Type — preferred for water works use.

Four Point Wedging Mechanism — assures positive shut-off.

Pinned Disc Assembly — valve operates in any position.

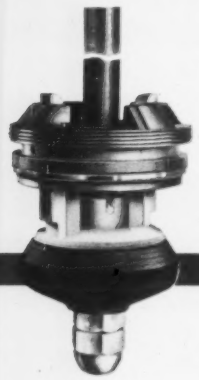
MATCHED IN QUALITY . . .

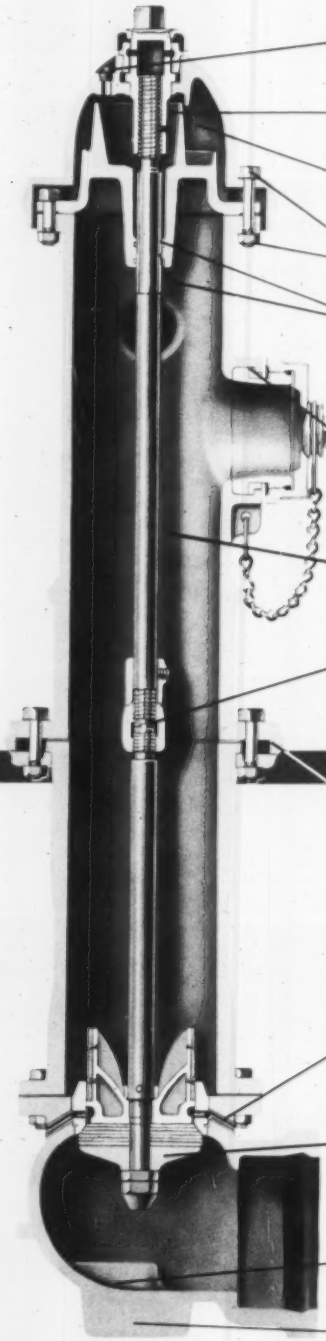
MUELLER

AWWA improved fire hydrants

Compare the many features of Mueller Fire Hydrants with those of ordinary hydrants. Compare the standard features . . . then compare the exclusive bonus features that have given Mueller Fire Hydrants an unequaled reputation of dependability and safety. Compare—and you, too, will standardize on Mueller AWWA Improved Fire Hydrants.

designed for above-ground maintenance!





- **Oil Filler Plug** . . . permits instant check of oil level with dipstick. Oil may be added without removing bonnet.
- **Oil Reservoir** . . . provides positive lubrication of all stem threads and bearing surfaces each time the hydrant is operated.
- **Dry Top Design** . . . threads and all bearing surfaces are sealed away from the water in the barrel.
- **Cadmium Plated Bolts and Nuts** . . . give greater resistance to corrosion.
- **"O" Ring Seals** . . . give permanent, water-tight seal by bearing against a bronze sleeve brazed to the top of the stem. Packing adjustments, binding of stem, stuffing box bolts and glands are completely eliminated.
- **Breech-Locked Nozzles** . . . four lugs lock bronze nozzle into barrel with a ⅛ turn to positively prevent blow-out. Nozzles are then calked with lead.
- **Full Flow Opening** . . . large radius hose and pumper openings reduce frictional loss to a minimum.
- **Safety Stem Coupling** . . . opens up to prevent damage to stem when hydrant is hit by a vehicle. Can be replaced in minutes without water shut-off.
- **Safety Flange** . . . breaks cleanly to prevent barrel breakage when struck by a vehicle, yet is strong enough to withstand normal use, shipping and testing. Permits economical repair, adding of extension sections, rotating of upper barrel section, changing of upper barrel section for different nozzle arrangements—all without digging or water shut-off.
- **Double Drain Openings** . . . fully bronze mounted. Annular drain groove in seat ring connects drain openings in ring and shoe. Openings are momentarily force-flushed each time hydrant is operated.
- **Compression Type Main Valve** . . . closes with the pressure—and stays closed without strain on stem. Permits repairs and changes of upper barrel section and operating mechanism without water shut-off.
- **Positive Stop** . . . integrally cast into shoe permits full opening without over-travel of stem.
- **Heavy Shoe** . . . designed for full flow with pedestal base and backing pad for ease in setting and blocking to prevent blow-off.

- **Double Drain Valves** . . . integral part of main valve assembly to give positive, automatic operation without springs, toggle joints or synchronized mechanisms.
- **Resilient Balata Valve** . . . layers of canvas impregnated with Balata resist wear and rock damage and insure a positive shut-off.
- **Bronze Seat Ring** . . . fine threads and copper-asbestos gasket prevent leakage around seat ring in both open and closed position. Straight threads permit easy removal from above-ground. Gasket comes out with seat ring.
- **Bronze Cap Nut** . . . seals bottom of stem and stem threads from water to reduce corrosion.
- **Pin and Guides** . . . prevent stem from rotating during operation of hydrant and eliminate tendency of stem to unscrew from main valve.

. DEPENDABILITY

• **"O" Ring Stem Seals** . . . upper "O" ring seals dirt and water from bearing surfaces and acts as a reserve pressure seal. Bottom "O" ring provides a positive water-tight seal to prevent external leakage. The higher the pressure, the greater the sealing force. Conventional packing may be easily converted to "O" ring stem seals.

• **Lubricant Reservoir** . . . the area between the "O" rings is filled with a special, lifetime lubricant. Each time the valve is operated, both "O" rings are completely lubricated. The thrust collar operates in an oil bath.

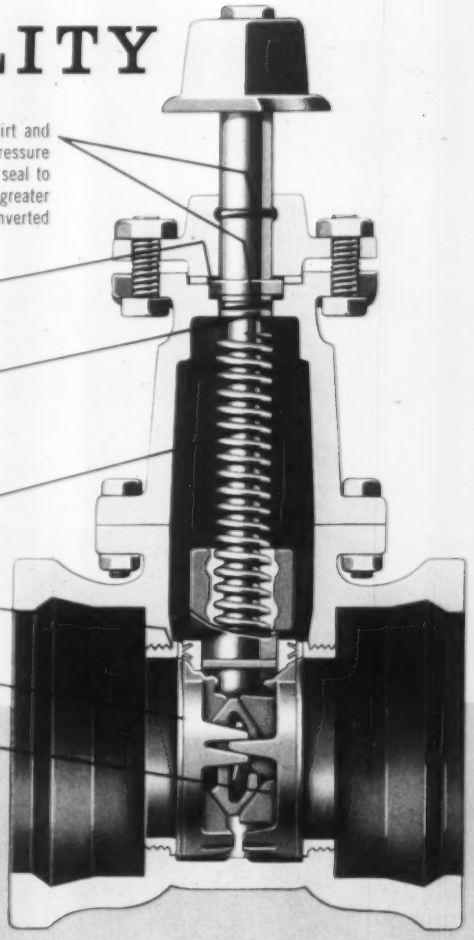
• **Heavy Bronze Stems** . . . are machined from high tensile strength solid bronze rod for all valves up to 16". Electrically upset thrust collar improves grain structure. Valves 18" and larger have stems cast from extremely high tensile strength manganese bronze.

• **Acme Stem Threads** . . . combine high strength and efficiency with self-cleaning ability.

• **Bronze Seat Rings** . . . accurately machined and threaded into body. May be replaced, if necessary, with the proper tools.

• **Bronze Disc Rings** . . . are rolled-in to become part of the disc and are then machined for precise mating with the seat rings.

• **Four Point Wedging Mechanism** . . . exerts even pressure at four points near the outer edge of each disc to eliminate disc deflection and distortion and to assure tight shut-offs. See illustration below.

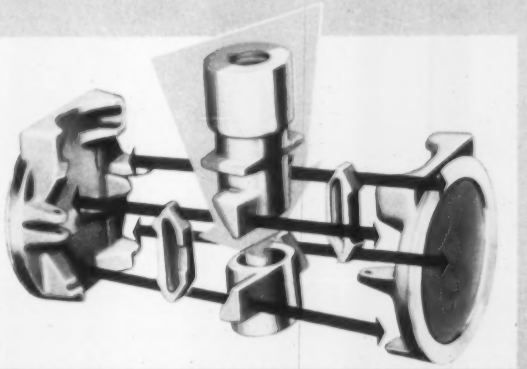


MUELLER

AWWA gate valves

You can forget about the gate valves in your water supply and fire protection systems when they're Mueller Gate Valves. Long-life features, dependability features, ease of operation features add up to maintenance-free service.

designed for minimum maintenance!



• **Exclusive Disc Movement** . . . discs move in an inverted "T" manner, as shown, when valve is opened or closed. The entire disc and wedging mechanism is held together as a unit by special bronze pins passing through interlocking lugs that are cast integrally with each disc. This permits operation of valve in any position. These pins and lugs also control the amount of disc movement. By maintaining a minimum of clearance, discs positively shear incrustations and deposits from seat ring upon closing. Yet, there is no abrasive sliding and scraping contact between disc and seat rings.

• **Husky Wedge Nut Flange** . . . supports entire gate assembly in perfect alignment without strain on wedging mechanism.

• **Opposed Wedges** . . . on top nut eliminate binding or twisting of stem. Nut is free to rotate and the only forces on the stem are straight up or straight down.

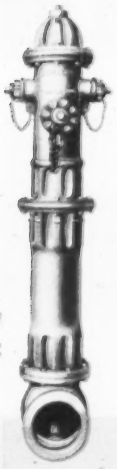
whatever your needs

specify **MUELLER**

AWWA IMPROVED FIRE HYDRANTS

- Working pressure: 150 p.s.i.
- Test pressure: 300 p.s.i.
- Inlet ends: Hub, Flanged, Universal, Mechanical Joint, "Ring-Tite" and "Fluid-Tite".

Two Way
Sizes: 4¼", 4½", 5¼", 6¼"



Three Way
Sizes: 4¼", 4½", 5¼", 6¼"

AWWA GATE VALVES

- **Working pressure:** 175 p.s.i.—2" through 12"
  150 p.s.i.—14" through 48"
- **Test pressure:** 300 p.s.i.

Non-Rising Stem

"O" Ring Seals through 36" size without gearing

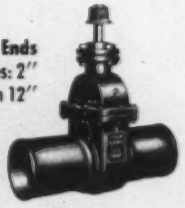
Conventional packing available on all sizes with or without gearing

Combinations of most end connections available

Hub Ends
Sizes: 2" through 48"

Flanged Ends
Sizes: 2" through 48"

Spigot Ends
Sizes: 2" through 12"



Mechanical Joint Ends
Sizes: 2" through 24"

Universal Ends
Sizes: 2" through 24"

Screwed Ends
Sizes: 2" through 8"

"Right-Tite" Ends
Sizes: 3" through 12"

"Fluid-Tite" Ends
Sizes: 3" through 12"

Outside Screw and Yoke

Conventional Packing only

Hub Ends
Sizes: 2" through 48"

Flanged Ends
Sizes: 2" through 48"

Screwed Ends
Sizes: 2" through 8"

Both Non-Rising Stem and O.S.&Y. Gate Valves may be ordered with either bevel or spur gearing. Grease cases are available for gearing on NRS valves. By-pass Valves are furnished when specified on larger valves.

Consult your Mueller Representative or write direct for complete details.

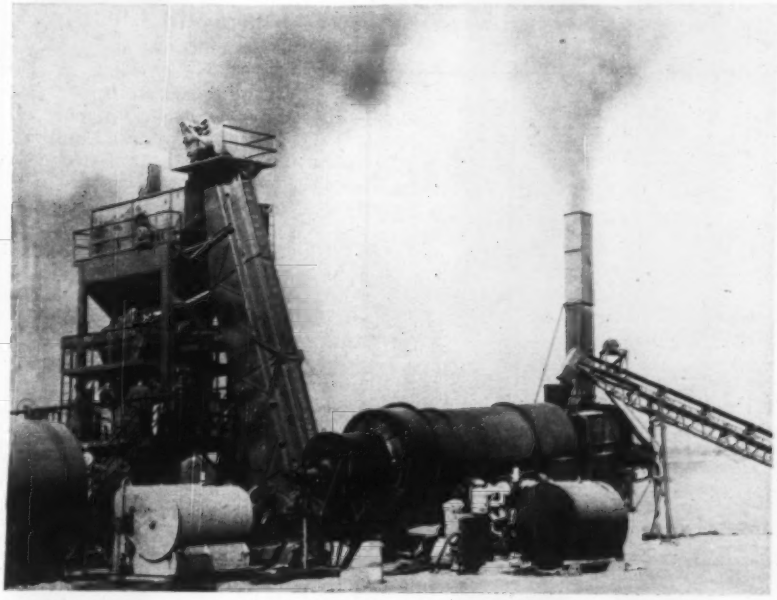
MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles.
In Canada: Mueller, Limited, Sarnia, Ontario

FORM NO. W-8879

PRINTED IN U.S.A.



PIONEER introduces a big new batch plant that can be moved by truck or towed.

Batch Plant Handles Two Mixes at Once

New, for the 1958 market, is Pioneer Engineering's Auto-batch bituminous plant, placed in production after more than two years of design, testing and operation in the field.

Designed along conventional lines for heavy construction, this new plant has automatic controls with interlocking timer to provide, according to the manufacturer, up to 15% greater output than similarly size-rated plants with conventional controls.

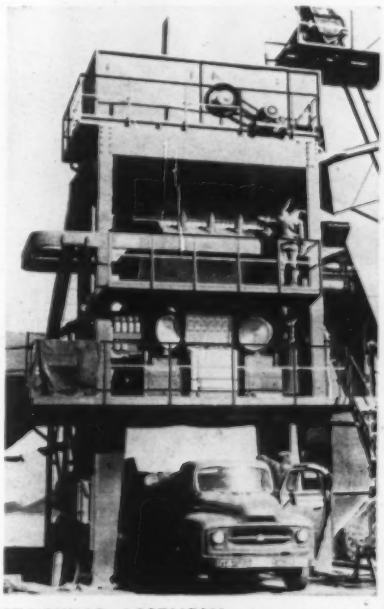
Quick-acting twin gates—the full length of the pugmill—discharge the batch in as little as three seconds. What's more, the plant can be switched to semi-automatic or manual control without modifying or disturbing the fully automatic feature.

Two predetermined mix formulas can be set up at one time, and the plant can be switched from one mix to the other as desired.

The aggregate heating and moisture removal unit (drier) has the dust collector mounted together with the drier on the same frame or chassis. This increases mobility and cuts moving time. The dust collector is a multi-clone unit.

Built for stacking assembly, each section of the tower unit—screening, weighing and mixing—is integrated for easy erection, teardown and moving. Sections can be low-boy loaded, or can be equipped for fifthwheel towing.

Rated at 6,000 to 7,500 pounds per batch, the plant has a 5 ft x 12 ft vibrating screen of ¾ in. stroke running at 1150 rpm, with a 10 deg slope. It is situated over a four-compartment hot bin of 30 tons capacity, divided 6-6-6 and 12 tons. A vertical mineral filler system with gravity feed has a capacity of 60 cu yd per hr.



STACKING ASSEMBLY of tower unit is integrated for easy erection and tear-down.

The 85 cu ft aggregates weigh hopper and 1000 lb asphalt bucket are suspended on scales graduated in 5 lb and 1 lb increments respectively.

A built-in device permits taking quick, accurate samples simultaneously. This device, as well as the hot-bin gates, weigh hopper gate, pugmill discharge gate, asphalt bucket, fill and discharge valves, are all actuated by fast, double-acting air cylinders controlled by solenoid valves.

A continuous circulating bitumen system is jacketed for steam or hot oil to maintain proper temperature of the bitumen; the pugmill is similarly jacketed. Pugmill liners can be removed in sections without disturbing the heating jacket.

On the combined drier-dust collector units, the drum is 90 in. in diameter, 24 ft long and built of ¾ in alloyed steel plate. It has a high side discharge spout, eliminating digging down for the hot elevator. A unique closure hood over the drum admits air to cool the discharge where the flame is the hottest and to provide auxiliary air for better combustion. Any of the generally accepted burners can be used with the drier and operating, indicating and recording controls are available. If desired, the burner can be equipped with a fully automatic modulating temperature control system.

The exhaust fan can draw 28,000 cfm at 350 F. All drier bearings are anti-friction type.

The entire plant is designed for operation by electric motors, with all on-plant wiring done at the factory.

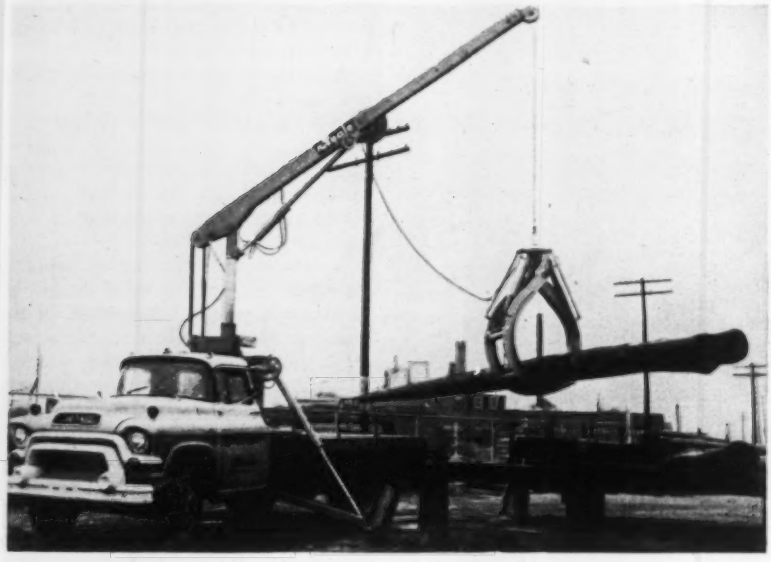
Total weight of the tower unit—including hot elevator—is approximately 88,000 lbs. Weight of the drier-dust collector unit, with covered fines return conveyor is approximately 70,000 lbs. Pioneer Engineering, Div. of Poor & Company, Minneapolis 14, Minn.

New Process Credited With Making Harder Drill Steels

A new controlled carburization process developed by Gardner-Denver Co.'s division in Denver is said to have increased the life of drill steel for hard-rock drilling up to 10 times the original span.

Company officials say that while carburization is in itself an old process of using heat to increase the carbon content of low-carbon alloy steel surfaces to produce highly hardened surfaces, there always has been a problem of

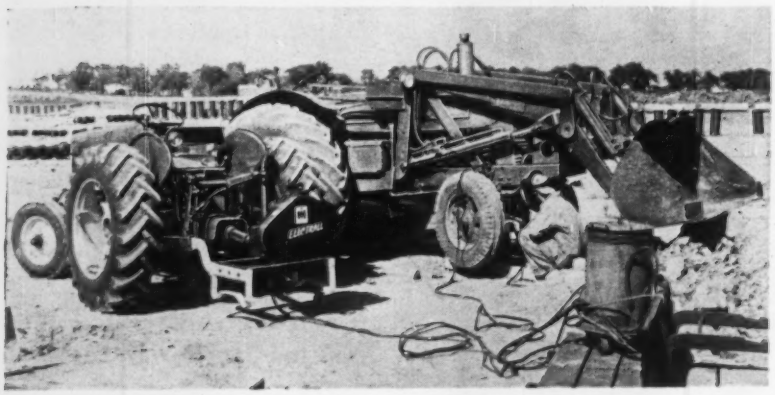
controlling the amount of carburization. If it is too much, the rod becomes too hard and too brittle, and breaks easily. The new method produces steel that performs more efficiently. THE GARDNER-DENVER CO., QUINCY, ILL.



Hydraulic Grapple Fork for Truck Crane

A hydraulic grapple-fork that opens to seven feet between the points when fully spread has been developed by Teale for its hydraulic truck mounted crane. The jaws overlap when closed, and two spring-loaded "take-up" reels are said to keep slack out of the double wire-braid hose.

The grapple-fork attachment weighs 730 lb and the company points to a swivel that prevents load turning. TEALE & CO., BOX 308, OMAHA, NEB.



Mobile Generator Provides Jobsite Power

A mobile power station now is being made in a trailing model for use with many 25 hp or larger tractors. The "Electrall" can give emergency power to a construction job when power lines fail or can be a source of power on jobs where regular high line power is not available.

The manufacturers say it can deliver 12.5 kva in continuous operation, producing 115-220 volt, 60 cycle, single phase alternating current; or 208 volt, three phase, 60 cycle current for motors up to 10 hp. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

Compact Machine Offers Grooving, Joint Cleaning

A compact, one-man operated machine can be used to widen or clean sawed or hand-formed joints in cement or bituminous concrete, remove old seal material for resealing or mill and widen random or uncontrolled cracks in cement or bituminous concrete to a width and depth for proper sealing.

According to the manufacturer, the bit will enter a track ⅜ in. wide, or will make a groove where no crack exists. Advantages claimed are that spalling, excessive widths, wasted sealing materials, sandblasting and time-taking tool changing are eliminated. WINDSOR MACHINERY CORP., 85 GRASSMORE AVE., ELMWOOD 10, CONN.

Additional Power Featured In a Streamlined Backhoe

A new backhoe, the Mark II, can dig to depths of 12½ ft with a loading height of 8½ ft and has 20% more power than in the former models.

According to the manufacturer, the backhoe offers a continuous swing arc of 200 deg and is capable of faster, smoother control.

Enclosing the boom cylinder and hydraulic hoses has given the backhoe a streamlined appearance. Fast detach characteristics plus closer mounting to increase stability are added features. HENRY MANUFACTURING CO., P.O. BOX 521, TOPEKA, KAN.

Tilting Platform Trailers Add Strength, Capacity

What the manufacturer calls an almost completely new line of tilting platform trailers is available.

The new trailers, for construction equipment, now have added strength built into them to meet the trend toward larger and heavier equipment, the manufacturer says. Part of the new line replaces the company's "B" models —generally used for construction equipment transportation—with a much heavier "J" series.

Features include new 10 in. deep side channels engineered to support heavy strains, imposed along the edges by wide tracked rigs, and greater overall heft. The "J" models are available in 6, 8 or 10 ton capacities. Also among the new lines is the "H"—a 4-ton model that replaces the A-3 ton and the F-5 ton trailers. MILLER TILT-TOP TRAILER CO., 434 S. 92ND ST., MILWAUKEE 14, WIS.

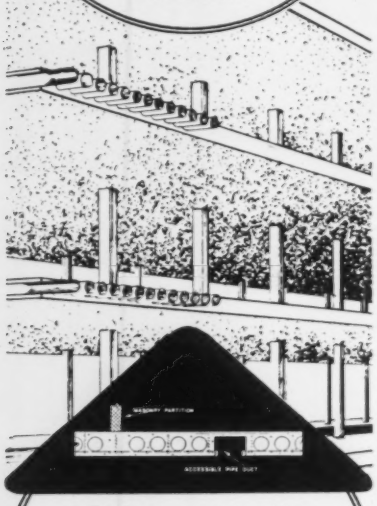
(*New Products continued on p. 84*)

A FAMILIAR SIGHT...
where the big jobs
are under way
HENDRIX
DRAGLINE BUCKETS
"A Type for Every Digging Purpose"
¼ to 40 CUBIC YARDS
Hendrix
Lightweight
DRAGLINE
BUCKETS
HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

stronger, lighter
more economical

concrete floors
and roof decks
with new revolutionary

*TUBE SLAB
CONSTRUCTION
SYSTEM



- Reduces construction costs
- Reduces floor thickness
- Lightweight
- Provides recessed ducts for mechanical installations
- Vibration-resistant—fireproof and soundproof
- Unlimited flexibility of design

* Trademark

Proven in actual use in over $50,000,000 of construction—typical installations are—I.B.M. Building, Hartford, Conn., Manchester, Conn. High School, Highway bridges in many states.

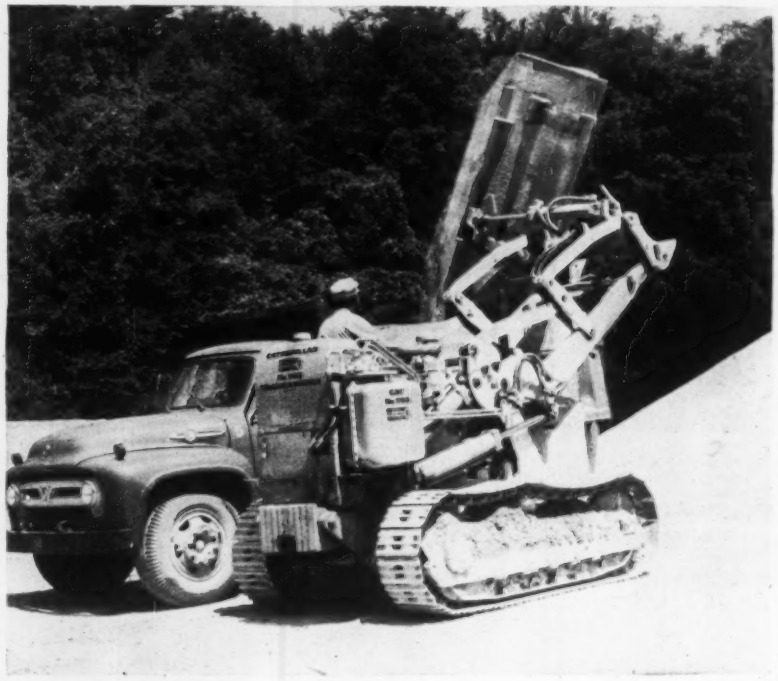
Tube Slab construction is in a patent pending status. The Tube Slab Company is exclusive licensee. Users without license are potentially liable for life of structure.

Authorized tube manufacturers can furnish license with invoice. For your protection insist on license signed by A. J. Macchi, the inventor (re E.N.R. May 29, 1952). Write for details.

PAT. PEND. U.S.A. AND CANADA

THE TUBE SLAB CO.

57 FARMINGTON AVE., HARTFORD, CONN.



Side Dump Bucket Speeds Cycle Time

A new side dump bucket attachment for the Cat 995 Traxcavator will permit sideways casting into a haul unit without turning.

Called in-line loading, this method reduces loading time and permits operation in confined areas. Faster cycle time is a direct result, say the manufacturers. CATERPILLER TRACTOR CO., PEORIA, ILL.

Dozer With Teeth Doubles as Ripper

Known as the "Gyrodozer", a bulldozer that mounts on a Cat D7 has four penetrating teeth on the cutting edge, allowing it to both rip and doze.

The blade, when tipped forward, positions its teeth for ripping; when tipped back, the teeth clear the ground for conventional bull-dozing. CATERPILLAR TRACTOR CO., PEORIA, ILL.

(*New Products continued on p. 86*)

Kaiser engineer sights through Berger 18" Dumpy Level under blistering desert sun on the site of Permanente's plant, designed to turn out 2,400,000 barrels of cement yearly.

Kaiser Engineers tell how

BERGER INSTRUMENTS beat desert sand and heat

Brutal climatic conditions were the order of the day, *every* day, during the construction of the huge Permanente Cement Company plant at Lucerne Valley, California. Yet, the job called for close tolerance measuring in layout of buildings and placement of machinery.

Berger Levels were continually exposed to this blistering desert heat and clouds of destructive dust—conditions that would challenge the accuracy of ordinary instruments. But not Berger Instruments. Kaiser engineers put it succinctly: "They stayed in adjustment and performed perfectly, *without maintenance*, in these difficult situations."

Layouts for mill building, primary crusher, burner building and clinker cooler foundations were all done with Berger Instruments. Rough grade tolerances were held to .01 ft., base plates and equipment foundations to .007 ft. Two 12 ft. by 450 ft. rotary kilns, among the world's largest pieces of moving machinery, were installed with the aid of Berger Instruments.

Heat, sand, dust—not every job calls for such punishment. But isn't it good to know you have this extra safety factor, just in case?

That's why, where accuracy is at stake... any time... in any clime, leading engineers and construction men buy Berger. Put yourself behind a Berger—and see why.

C. L. Berger & Sons, Inc., 45 Williams St., Boston 19.

Write for literature

THE BEST IN SIGHT IS BERGER

Engineering and Surveying Instruments... Since 1871

ENGINEERS' TRANSITS
BUILDERS' INSTRUMENTS
LEVELS
ALIDADES
THEODOLITES

Do You Have This PIPE PROTECTION PROBLEM?

Underground piping must be protected against destructive forces of corrosive soils and electrolytic conditions. Normally, coal tar coating as called for in AWWA specifications C-203 and C-204 would be hot-applied at a coating mill. However, there are times when the volume of pipe involved or the distance of a coating mill make this impractical from a time and cost standpoint.

You'll find the ANSWER with TAPECOAT® . . . the Quality Coal Tar Coating in Tape Form

TAPECOAT is the widely-accepted alternate material that is equivalent to mill-applied hot coal tar protection. With this easy-to-use material, protection can be applied in the field by your own men, because technical know-how, kettles and special crews are not required. You save time and money while providing the long-life protection called for.

TAPECOAT is easily applied, using a torch to soften or bleed the pitch which gives both bond and protection. Available in widths from 2″ to 24″, it is spirally wrapped or cigarette wrapped around pipe, pipe joints, couplings, conduit, cable, and insulated piping.

Write for illustrated brochure.

The TAPECOAT® *Company*

Originators of Coal Tar Coating in Tape Form

1551 Lyons Street
Evanston, Illinois

Acoustic Ceiling System Cools and Heats Also

A new ceiling system offers radiant heating and cooling, along with acoustical qualities in noise reduction.

The ceiling is designed around 12 x 24 in. aluminum Airtex Radiant Panels, and may be suspended at any height. The panels can be integrated with any type of standard acoustical tile, and the acoustical material adjacent to the panels also will radiate, claims the manufacturer.

Thermal heat bridges are incorporated in the back of the panels and are designed with a large cross-sectional area, which contacts water pipes installed above.

Water pipes are connected to square shape headers, which are part of the ceiling system. AIRTEX CORP., 2900 N. WESTERN AVE., CHICAGO 18, ILL.

Barber-Greene Ditcher Increases Operating Depth

The Barber-Greene Model 705-B "Runabout" Ditcher now features a maximum digging depth of 56 in.

According to the manufacturer, this represents an increase of 8 in. in maximum digging depth of the former capacity of the rig. The longer boom now also will cut the full range widths, 5½ in., 7½ in. and 10½ in. BARBER-GREENE CO., 400 N. HIGHLAND AVE., AURORA, ILL.

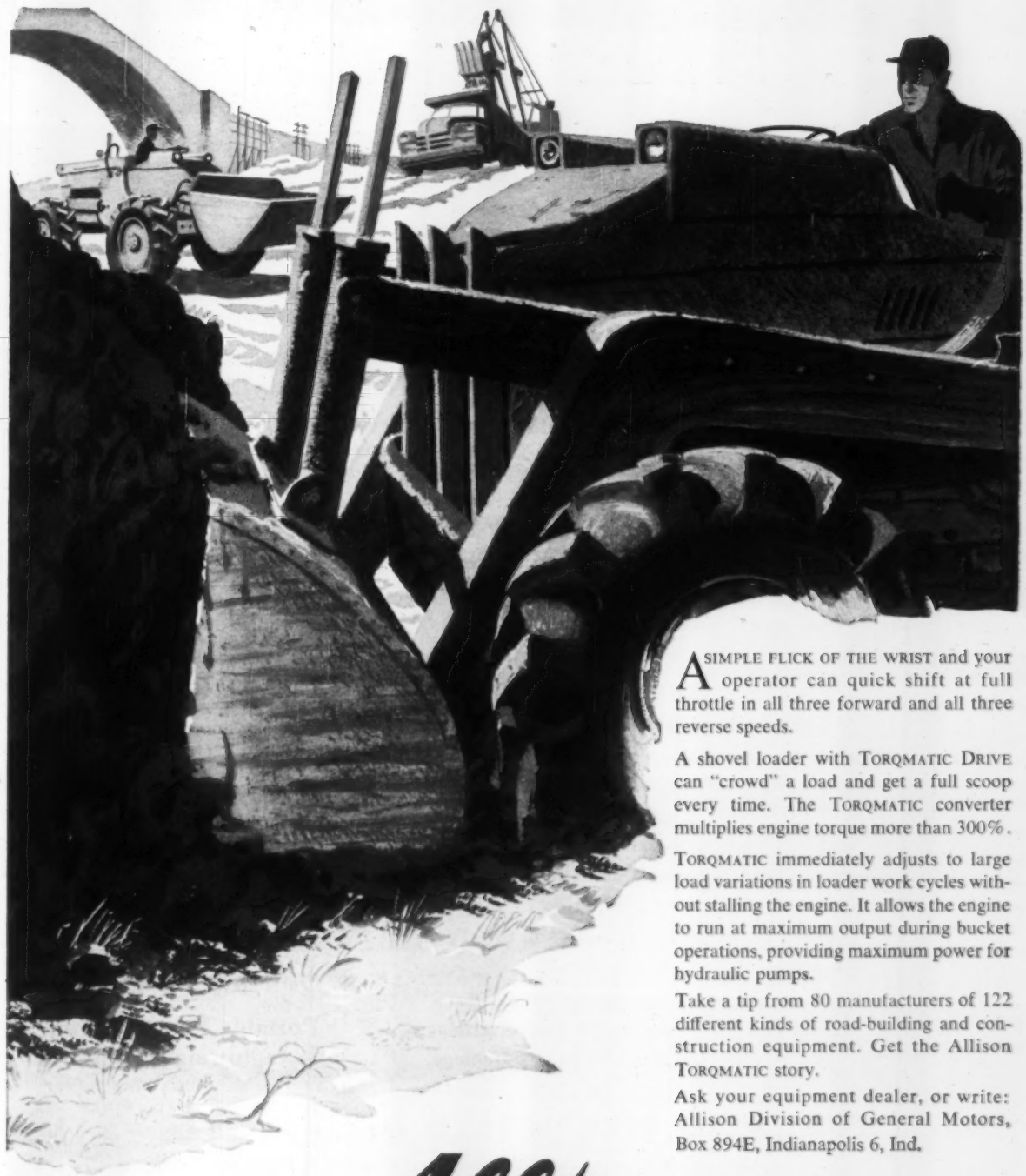
Lightweight Rock Bodies Now on Market

The Heil Co. has just completed the first of a series of large rock bodies—36 cu yd—fabricated from aluminum alloy plate and extruded sections. Being mounted on off-highway trucks, with telescopic hoists, the units are to be exported to haul bauxite.

While aluminum plate bodies are more expensive, it is expected that they will offer advantages in operation by increasing the payload and reducing tire wear and gasoline consumption. THE HEIL CO., MILWAUKEE 1, WIS.

(*New Products continued on p. 88*)

TORQMATIC loaders quick shift in all gears



A SIMPLE FLICK OF THE WRIST and your operator can quick shift at full throttle in all three forward and all three reverse speeds.

A shovel loader with TORQMATIC DRIVE can "crowd" a load and get a full scoop every time. The TORQMATIC converter multiplies engine torque more than 300%.

TORQMATIC immediately adjusts to large load variations in loader work cycles without stalling the engine. It allows the engine to run at maximum output during bucket operations, providing maximum power for hydraulic pumps.

Take a tip from 80 manufacturers of 122 different kinds of road-building and construction equipment. Get the Allison TORQMATIC story.

Ask your equipment dealer, or write: Allison Division of General Motors, Box 894E, Indianapolis 6, Ind.

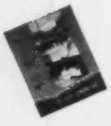
GM TORQMATIC

Allison

TORQMATIC® DRIVES

non-slipping power transmission licks tough coral digging

You dig coral rock when you dig in Dade County, Florida. Clevelands have been chewing out trench in these tough rock formations for over 30 years, delivering good steady production on every job. This dependable performance in rugged digging is largely due to Cleveland's time-proved system of economical power transmission to digging-wheel and crawler, through positive, power-saving, non-slipping gear trains. Cleveland's exclusive multi-speed transmission gives the operator finger-tip control of more than 30 usable, closely graduated combinations of digging-wheel and crawler speeds, putting at his command always the *right* combination of digging power and speed for every soil and terrain, for every digging condition.



Send now for Folder V-616 fully describing this valuable Cleveland Trencher advantage.

The CLEVELAND TRENCHER Co.

20100 St. Clair Ave.
Cleveland 17, Ohio

Good .... *Everywhere*

Power From the Wind: 6 Kw Unit on Market

A wind driven power package consisting of a 6 kw wind generator, battery bank, and a standby diesel generator is being manufactured to provide electrical power in remote, isolated areas. It is designed to operate unattended for months at a time.

The blade design permits electrical power-generation at wind velocities as low as 6 mph, while maximum continuous output of 6 kw is obtained at a wind velocity of 20 mph. Hydraulic pitch control of the 33 ft dia propeller blades assures constant generator speed at varying wind velocities.

The complete plant, mounted on a 33 ft steel tower, is capable of withstanding wind velocities in excess of 100 mph because a storm-stop automatically feathers the blades when winds exceed 45 mph.

During long periods of low wind velocity, the load is carried by a bank of batteries, and when required the standby diesel generator automatically starts and recharges the battery. Automatic Power, Inc., 205 Hutcheson St., Houston 3, Texas.

Portable Power Hammer Is Lightweight, Powerful

A new lightweight portable power hammer, said to fill a wide range of work uses, is driven by a 1¼ hp, two-cycle, air-cooled gasoline engine.

The manufacturer claims that a new driving principle, which creates a high velocity blow through a spring and crank assembly, makes possible 1,500 blows per minute with less wear on tools than the direct-connected hammer. Racine Hydraulics and Machinery Co., Racine, Wis.

Why SHOULDN'T I be interested in a buy and sell agreement?

"Every young fellow is interested in the future of his dad's business."

Whether your business is a sole proprietorship, partnership, or close corporation, its future — and your family's — may well depend upon a sound buy and sell agreement funded by an adequate business life insurance plan.

Ætna Life's Business Planning Service can assist your attorneys and accountants in setting up a plan which will prevent financial chaos in the business and hardship in the family.

Thoroughly trained Ætna Life representatives in 91 agencies, coast to coast, are ready to offer you this unusual planning service.

ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .

- To preserve **PARTNERSHIP** values when death comes to any partner.
- To preserve **SOLE PROPRIETORSHIPS** for heirs or selected employees.
- To preserve ownership values when death comes to any stockholder in a **CLOSE CORPORATION.**
- To indemnify any firm for the death of a **KEY MAN.**

Add Life to your Business with Ætna Business Life Insurance

ÆTNA LIFE
INSURANCE COMPANY

Affiliates:
ÆTNA CASUALTY AND SURETY COMPANY
STANDARD FIRE INSURANCE COMPANY
Hartford, Conn.

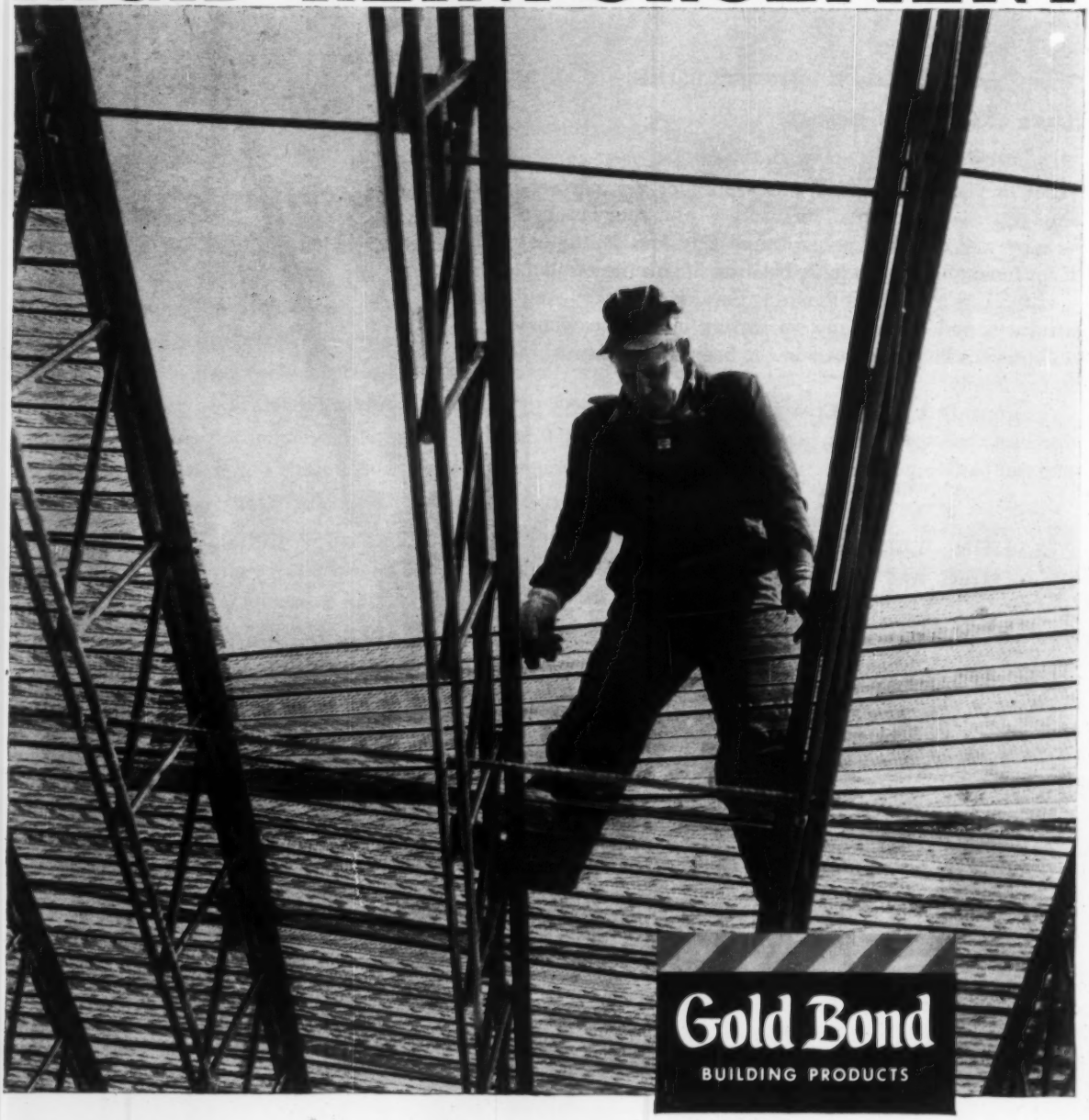
Gold Bond Metal Lath Centering

You combine a rigid pouring form with excellent slab reinforcement when you specify Gold Bond ⅜" Rib Lath for centering in poured concrete roof and floor slabs.

Gold Bond® ⅜" Rib Lath offers exceptional reinforcing for concrete because it is mechanically bonded to the very bottom of the slab — the place where tension stresses are greatest. And there's no need for stretching or for erecting costly temporary bracing — the lath is simply laid across the joists and easily clipped in place.

For complete technical data, write Dept. EN-38, National Gypsum Company, Buffalo 2, New York.

RIGID REINFORCEMENT



NATIONAL GYPSUM COMPANY

Negligent Actions

Liability may be imposed even though independent contractor is employed

One who hires an independent contractor generally is not liable for injuries from the negligent acts of the latter. But the rule is subject to many exceptions. An important element is the degree of control retained over the independent contractor.

The control test was recently applied in a New Jersey case started by the estate of a worker who died of injuries on a construction job. The suit was against Point Pleasant Home Construction Co., which was engaged in a housing development project, a plumbing contractor on the job, and an employee of the latter.

Point Pleasant did not hire a general contractor. It furnished the materials required for construction of the homes and arranged with several contractors to do parts of the work. These contractors furnished their own workers, supplied incidental material, tools and equipment and generally exercised complete supervision over their employees and the manner in which the work was done.

The decedent was employed in lacquering floors in one of the homes. The work was done with inflammable materials. In the basement, an employee of the plumbing contractor was using a torch to anneal some of the piping. As a result, an explosion occurred, killing the worker lacquering the floors.

The action against the development company was dismissed on the ground that the accident resulted from the negligent acts of an independent contractor and his employee. This judgment was reversed on appeal, the appellate court[1] holding that there was evidence to show that the construction company exercised control over the work and the question whether the death resulted from negligence on the part of the construction company was a question of fact to be submitted to the jury.

The appellate court stated: "Generally, one who employs an independent contractor is not liable for injury occasioned by the latter's negligence or that of his employees. Meny v. Carlson, 6 N.J. at pages 97-98, 77 A. 2d at pages 252-253; 2 Restatement, Torts, Section 409, page 1100 (1934). A number of exceptions and apparent exceptions to this immunity have arisen. An employer will be held for his own wrong, Restatement, above, section 410, page 1102; he may have been negligent in hiring unskilled and improper persons as contractors, Ibid., section 411, page 1107; Healy v. Savre, 113 N.J.L. 308, 311, 174 A. 534 (E. & A. 1934); giving the contractor poor instructions or faulty equipment, Restatement, Agency, section 213, page 464 (1933) Torts, section 415, page 1122; or failing in his duty to inspect the work which the contractor was employed to do, 2 Restatement, torts, section 412, page 1114. See, generally, 2 Harper and James, Law of Torts, sections 26.1, 26.1, pages 1362, 1405 (1956). The employer of an independent contractor will also be held liable if the work was of a kind which the employer should have recognized would during its progress necessarily create the danger of the mishap which occurred, and thus contained or involved an unreasonable or peculiar risk of bodily harm to plaintiff unless special precautions were taken. 2 Restatement, Torts, sections 413, 416, pages 1118, 1128 (1934); cf. Sarno v. Gulf Refining Co., 99 N.J.L. 340, 344, 124 A. 145 (Sup. Ct. 1924), affirmed per curiam, 102 N.J.L. 223, 130 A. 919 (E. & A. 1925: Tarranella v. Union Building & Construction Co., 3 N.J. 443, 70 A. 2d 753 (1950); Gibilterra v. Rosemawr Homes, Inc., 19 N.J. 166, 171, 115 A. 2d 553, 555 (1955)."

The court, quoting from 2 Restatement of Torts, section 414, page 1120, stated: "One who entrusts work to an independent contractor, but who retains the control of any part of the work, is subject to liability for bodily harm to others, for whose safety the employer owes a duty to exercise reasonable care, which is caused by his failure to exercise his control with reasonable care."

Under Comment (a) from the same authority, it is noted that: "The employer may, however, retain control less than that which is necessary to subject him to liability as master. He may retain only the power to direct the order in which the work shall be done * * *. Such a supervisory control may not subject him to liability under the principles of Agency, but he may be liable under the rule stated in this Section unless he exercises his supervisory control with reasonable care so as to prevent the work which he has ordered to be done from causing injury to others."

The appellate court indicated that there was evidence to show that at the time the accident occurred, the Point Pleasant Home Construction Company controlled the work when the floor finishing and plumbing work was being done and directed that both parts of the work be done at the same time and that it was up to the jury to determine if this control by Point Pleasant was exercised with reasonable care in view of expert testimony to the effect that an open flame could not be used safely near the place where flammable lacquer was being used to finish the floors. For this reason the appellate court reversed the decision of the trial court in dismissing the cause of action against Point Pleasant and directed a new trial.

(1) Berquist v. Penterman et al., 134 A. 2d 20, Superior Court of New Jersey, Appellate Division, July 25, 1957.

Courts Look to Intention In Construing Contracts

"It is fundamental that the court will not make a better contract for the parties than they have voluntarily made for themselves, nor will it alter their contract for the benefit or detriment of either, but will endeavor to give effect to their intention."[1]

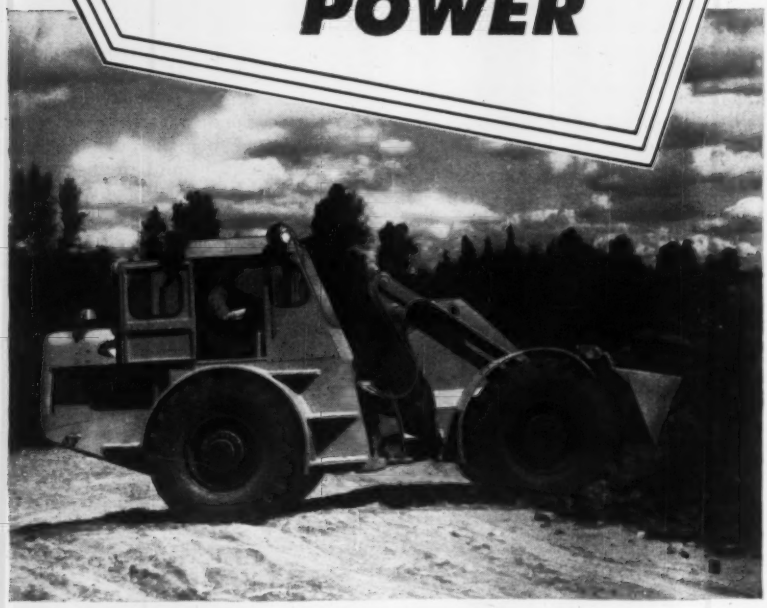
Generally, standards of interpretation of contracts, except where it produces an ambiguous result, or is excluded by a rule of law establishing a definite meaning, is to give it the intention that would be given to it by reasonably intelligent persons acquainted with all operative usages and knowing all the circumstances at the time the contract was made and what the parties intended it to mean.[2]

In another case,[3] the court, quoting from the case of Herlihy Mid-Continent Co. v. Sanitary District, 390 Ill. 160, 60 N.E. 2d 882, 886, stated: "In construing a contract, the primary object is to ascertain the intention of the parties. Decatur Lumber and Mfg. Co. v. Crail, 350 Ill. 319, 183 N. E. 228. That intention must be determined from the language in the contract. If the intention may be ascertained from the wording of the contract, rules of construction have no application. Domever v. O'Connell, 364 Ill. 467, 4 N.E. 2d 830, 108 A.L.R. 476. No words can be added to or taken from a contract and thereby change the plain meaning of the parties as expressed therein. Stevens v. Felman, 338 Ill. 391, 170 N.E. 243. Nor may the courts engage in surmises as to what the parties intended but which they failed to express."

(1) Mack v. Revicki, 135 A. 2d 569.
(2) Weber v. Crown Central Petroleum Corp., 132 A. 2d 857.
(3) Chicago Land Clearance Commission v. Jones, 142 N.E. 2d 800.

(*Legal continued on page 92*)

LOADING SHOT ROCK
takes EXTRA POWER



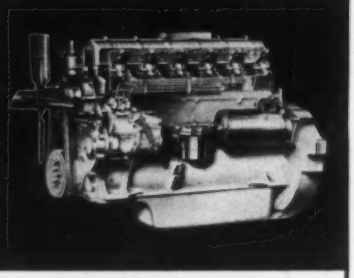
SCOOPMOBILE does it easily with

WAUKESHA Diesel

● Tough stuff to load—that shot rock! Takes a real loader with an engine that can pour on the power. With its Waukesha Diesel, and 100% breakout bucket action, this 1½ cu. yd. LD 5P Scoopmobile handles a lot of yardage for Bowman Sand & Gravel Co., Albany, Oregon—steadily, smoothly, quickly. Four-wheel planetary drive gives power to spare. Power steering, power shift forward and reverse transmission, and 4-wheel power brakes lighten the work of the operator. Waukesha Diesels also give you easy starting, quick warm-up, snappy acceleration, with high fuel economy and most economical upkeep.

372

POWERING the SCOOPMOBILE



Waukesha 190-DLC Diesel—Six cylinders, 3¾ x 4-inch, 265 cubic inch displacement. Send for descriptive bulletin 1411.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

. . . Legal

Loss of a Contract

Interference by surety is held not actionable

If a contractor loses a contract he would otherwise have received, or is prevented from performing a contract, because of wrongful interference, he can sue for damages. But if the interference is by an interested party, such as a surety, the suit may fail.

Such a suit was dismissed by a federal court last year under the following circumstances.

The contractor for a $338,000 steam generator project at the U. S. Naval Air Station at Oceana, Va., defaulted. The Navy and the contractor's surety, American Fidelity Co., agreed to relet the balance of the work. Contract negotiations were conducted by the surety. A $268,785 bid was received from L. T. Zoby & Sons. The surety told Zoby: "It is your job". It advised the Navy that Zoby's bid was acceptable to it.

On the next day Coe Contracting Co., which had earlier submitted a high bid, submitted a bid that was found to be lower than Zoby's. The surety recommended the Navy accept Coe's bid, which it did.

Zoby then brought an action against the surety company to recover damages for breach of contract. This action was dismissed on the ground that no contract existed, that is the only party authorized to make the contract was the Navy. Zoby was permitted to serve an amended complaint wherein he sought damages for preventing the award of the contract to it. This action was also dismissed by the trial court, which judgment was affirmed on appeal.[1]

The appellate court held that the evidence proved that Heron had made no contract awarding the job to Zoby. The Navy alone, and not the surety, was the contracting party and there was no evidence produced at the trial to show that it authorized any award of the contract.

On the issue of interference, the court said: "The District Judge ruled and we think, correctly, that assuming that the Navy would have awarded the contract to Zoby but for the defendants' interference, the interference was, under the circumstances, privileged. Where the alleged interferer is a financially interested party and such interest motivates his conduct, it cannot be said that he is an officious or malicious intermeddler. See Kurtz v. Oremland, 33 N. J. Super.

(Continued on page 94)

There were no delays with REINFORCED CONCRETE

Whether a simple overpass or a complex four-level highway separation structure, you can count on its being open for traffic on time when you design in reinforced concrete.

First, you know that your materials and labor are available "on location" . . . ready to start and proceed to completion. Second, necessary field changes can be made without costly delays.

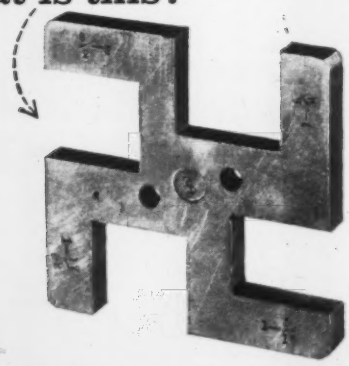
Reinforced concrete offers many other advantages, too . . . it is rugged, highly resistant to weather and shock. Reinforced concrete structures are lower in first cost and require lower maintenance. Compare . . . and you will save with reinforced concrete.

Petaluma Creek Bridge, illustrated above, was designed by the Division of Highways, Sacramento, California.

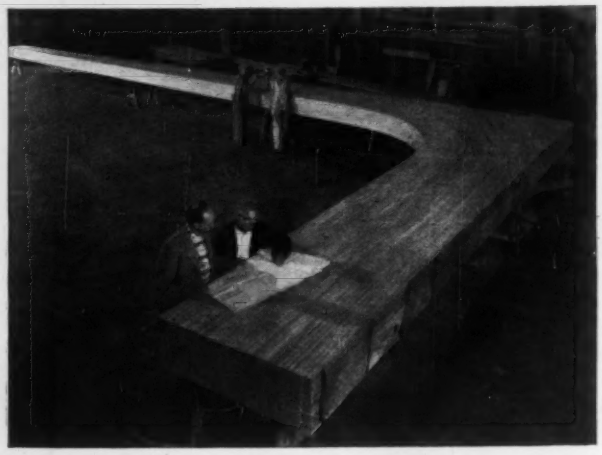
CONCRETE REINFORCING STEEL INSTITUTE
C.R.S.I.
FOUNDED 1924

Concrete Reinforcing Steel Institute
38 S. Dearborn St., Chicago 3, Ill.

What is this?



and what does it have to do with this?



At Timber Structures, Inc., we call this swastika-like object the cat's whisker gauge. It is an important part of our quality control system. With it, frequent checks are made of the thickness of material being surfaced for lamination.

Thickness literally is regulated to a "cat's whisker", so that every piece in an arch, beam or other member makes perfect contact with other pieces. Glues are 100% effective, and the member is one dimensionally stable piece with strength at the glue lines as great or greater than in the wood.

This gauge is only a small part of the system of quality controls at Timber Structures, Inc. Other tests of glue quality, wood moisture, temperature, application of glues, and clamping pressures are all made persistently so that laminated material may be relied upon fully.

Such quality controls show why all laminated timbers are not alike —and why we are able to stand behind the performance of our product. They are the big reason why informed architects, engineers and contractors specify laminated members by Timber Structures, Inc. Nothing less is good enough!

TIMBER STRUCTURES, INC.

P. O. Box 3782-C, Portland 8, Oregon

Offices in Ramsey, N. J.; New York City; Boston; Philadelphia; West Hartford; Cleveland; Charlotte; Chicago; Centerline, Mich.; Kansas City; St. Louis; Minneapolis; Des Moines; Wichita; Memphis; Dallas; Houston; Birmingham; Beverly Hills; Seattle; Spokane; Denver.

TIMBER STRUCTURES, INC. OF CALIFORNIA
Richmond • Sacramento

Local Representatives throughout the United States and Canada

SEE OUR CATALOG IN SWEET'S INDUSTRIAL CONSTRUCTION FILE OR WRITE FOR COPY

443, 111 A. 2d 100; Restatement of Law of Torts, Sec. 769.

"Assuredly the defendants had an economic interest in the award of the completion contract, for they were to be responsible for the amount by which the completion price, added to the advances made to Regent, exceeded the original contract price of $338,000. The depositions clearly show that to supplement the funds on hand, an additional allocation of $30,000 was necessary for completion, and the sureties were ultimately responsible. It was, therefore, legitimate to the interest of the defendants (surety companies) under their pre-existing indemnity contract to recommend the Coe bid, which was $7,785 lower than Zoby's."

(1) Zoby v. American Fidelity Company, 242 F. 2d 76, U.S. Court of Appeals, Fourth Circuit, March 6, 1957.

Fraud Held Not a Subject For Contract Arbitration

The question of whether a contract has been induced by fraud and misrepresentation is not subject to arbitration even though the contract provides for arbitration of all disputes that might arise as to its validity, interpretation or performance.

This rule was followed recently by the New York Court of Appeals in a suit for damages for breach of contract.

It was claimed that the breach arose from fraud and misrepresentation inducing the claimant to enter into the contract.

The action started as an application for arbitration. The adverse party asked for a stay of the proceedings on the ground that one of the issues—fraud and misrepresentation—was properly a subject of arbitration. Two lower courts denied the stay.[1]

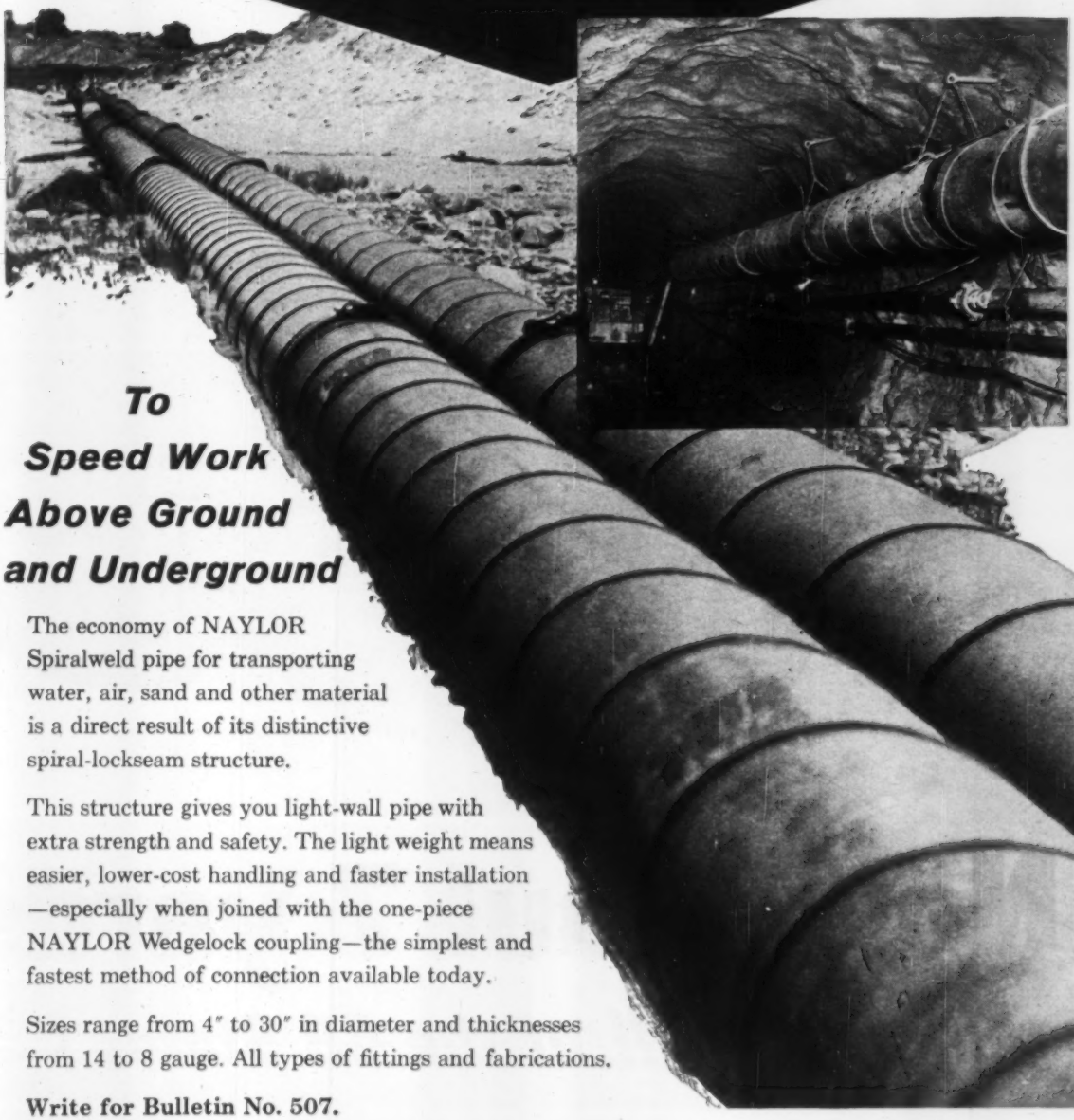
On appeal, the Court of Appeals reversed.[2] It held that under the terms of the contract the question of whether the claimant was induced to enter the contract as a result of fraud or misrepresentation was not a subject to be arbitrated. Even if the claimant had tried to rescind the contract, the court noted, the issue would have had to be tried in court before it could be known whether a contract existed to support the jurisdiction of an arbitrator.

(1) Wrap-Vertiser Corp. v. Plotnick, 155 N. Y. 2d 806, 2 A.D. 2d 346.

(2) Wrap-Vertiser Corp. v. Plotnick, 3 N. Y. 2d 17, N. Y. Court of Appeals, May 16, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.

LOW-COST TRANSPORTATION SYSTEM



To Speed Work Above Ground and Underground

The economy of NAYLOR Spiralweld pipe for transporting water, air, sand and other material is a direct result of its distinctive spiral-lockseam structure.

This structure gives you light-wall pipe with extra strength and safety. The light weight means easier, lower-cost handling and faster installation —especially when joined with the one-piece NAYLOR Wedgelock coupling—the simplest and fastest method of connection available today.

Sizes range from 4″ to 30″ in diameter and thicknesses from 14 to 8 gauge. All types of fittings and fabrications.

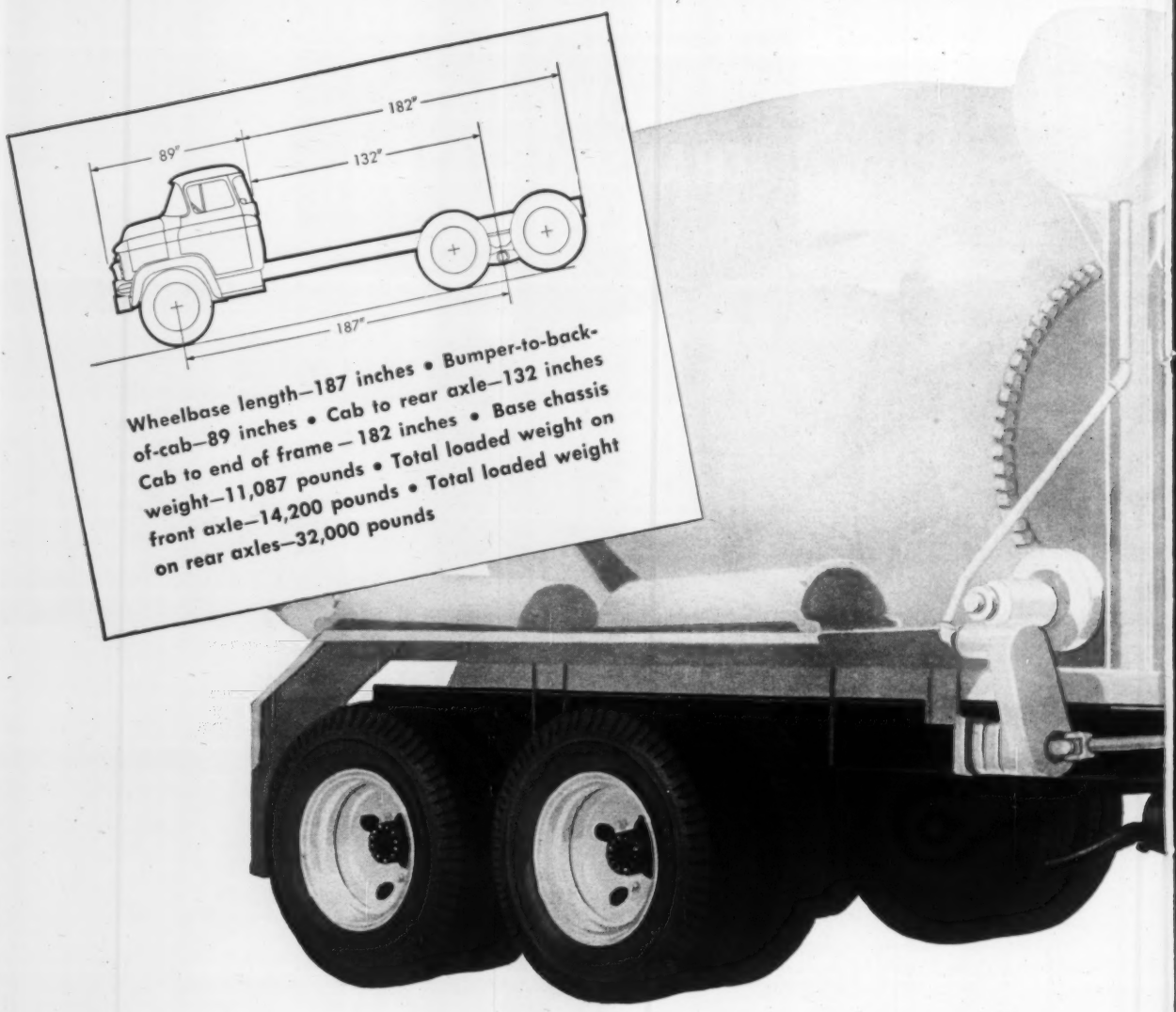
Write for Bulletin No. 507.

NAYLOR

NAYLOR PIPE COMPANY

1248 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office 60 East 42nd Street, New York 17, N. Y.



Wheelbase length—187 inches • Bumper-to-back-of-cab—89 inches • Cab to rear axle—132 inches Cab to end of frame—182 inches • Base chassis weight—11,087 pounds • Total loaded weight on front axle—14,200 pounds • Total loaded weight on rear axles—32,000 pounds

Now - haul 7 yards

in nearly all of the 48 States!

GMC's spanking-new FW556 is your truck! For no other regular, in-production model anywhere can haul 7 full yards at a clip—even in states with limitations as low as 46,400-lbs. gross

You see, this rig's all "muscle": with ⅜-inch heat-treated frame rails that eliminate the need for reinforcement—rubber "biscuit" mounting instead of steel springs—aluminum saddles and wheels.

The pay-off is a vehicle weight of only 11,087 pounds. Add 6,760 lbs. for a lightweight mixer, and you still have room for 28,350 lbs. of payload—all within a 46,200-lb. total.

ILLUSTRATED GMC FW556 MONEY-MAKER is just one of a complete line of GMC's *extra-stamina-engineered* for construction work. They're available with conventional, dual-purpose or c.o.e. cabs—gasoline or Diesel power—regular or Allison Torqmatic* transmissions.

**Optional at extra cost*

# of mix every trip

Power to haul these extra-size loads comes from GMC's 370-cubic-inch V8. It delivers 232 high-torque horsepower that takes on the toughest on-and-off-the-road work without breathing hard. And it turns the 7-yard barrel, too—through its front-end PTO.

But the real eye-opener is its price tag! For all these advantages are yours at a figure *hundreds of dollars* lower than anything else close to its class. Check that at your GMC dealer's!

GMC TRUCK & COACH—*A General Motors Division*

GMC—America's Ablest Trucks

Available in models from ½ to 45 tons

Joy Blast Hole Drilling Systems... Performance We Can Prove

When you stack up the performance of a Joy TWM-5 Challenger Drill using the specially designed Joy Tungsten Carbide bits and drill steels . . . add the reliable Joy RP-900 Airvane Rotary Compressor . . . you have a matched Joy Drilling System that will bottom large blast holes *quickly* and *economically*. This is one of a series of matched combinations for all hole sizes and depths which make up the Joy line of drilling systems.

Because Joy Equipment is engineered for modern drilling practices . . . and built for unequalled field reliability, the Joy Components: compressors, drill rigs, shanks, steels, couplings and tungsten carbide bits become a complete drilling system for guaranteed performance. *The Joy drilling system will out-perform competitive equipment anywhere.*

For the CONSTRUCTION AHEAD . . . for getting the rock drilled at the lowest possible cost . . . ask the nearest Joy Distributor to show you how the Joy matched drilling system will increase your profit. Ask for a demonstration. Get *your* share with Joy. Write ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: ***Joy Manufacturing Company (Canada) Limited, Galt, Ontario.***

WSW C 6978-223

JOY... EQUIPMENT FOR CONSTRUCTION... FOR ALL INDUSTRY

Write for free bulletin 223-24

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

Sime Appointed to Help End Montana Road Fight

Controversy over location of some sections of interstate highway in Montana has resulted in the appointment of a coordinator of public information—a new position under the State Highway Commission.

In mid-January, George T. Sime, former highway department right-of-way agent, took over the new job. He has a directive from the Commission to see to it that all concerned are fully informed as to the reasons for the new road and their locations in order to end controversy.

Main opposition has arisen from farmers and ranchers in the rich bottom lands of the state's valleys.

They want the interstate highway routed further from the rivers and at higher elevations—on benchland—and not through their irrigated lands.

They also have objected to the limited access provision, which they fear will prevent their moving stock from one side of the road to the other without lengthy trips.

Donald Stephens Named Canadian Member of IJC

Donald M. Stephens, chairman of the Manitoba Hydro-Electric Board, has been appointed as the third member of the Canadian section of the International Joint Commission. He replaces George Spence of Regina, whose term has expired.

The appointment means that now all three Canadian members of IJC are engineers (two of the three U.S. members are engineers). Mr. Stephens was president of the Engineering Institute of Canada in 1955 and was at one time Deputy Minister of Mines and Resources for the province of Manitoba.

CEA of California Elects Harold King

New president of the Consulting Engineers Association of California Harold P. King (left) receives congratulations of retiring president Ralph M. Westcott. Mr. King is a Sherman Oaks, Calif., structural engineer. Mr. Westcott, who headed the association for two years, is a Los Angeles mechanical engineer. Also elected to office at a recent meeting held in Santa Barbara were vice president—John A. Blume, San Francisco civil and structural engineer and secretary-treasurer—Arch D. McDougald, Fresno electrical engineer.

Admiral Jelley Starts Practice in Colorado

Rear Adm. Joseph F. Jelley has opened a consulting practice in Colorado Springs.

Recently retired from the Navy Civil Engineer Corps after 30 years service, he was Chief of the Bureau of Yards & Docks during the Korean War and most recently headed up all Navy construction in the Pacific Ocean area. Admiral Jelley is a past President of the Society of American Military Engineers.

State Commission Creates Urban Highway Division

The Kansas State Highway Commission has created an urban highways division and put R. O. Skoog in charge.

The new department will serve Kansas cities in matters of traffic, rights-of-way, lighting, construction, contracts and agreements. It will coordinate state operations with city governing bodies, check and review plans for urban projects and coordinate procedure on rights-of-way and design between the state and cities.

Mr. Skoog has been the commission's assistant engineer of design for the last 11 years and a commission employee for 34 years.

Saville to Head College's Science Center Study

Thorndike Saville, dean emeritus of New York University's College of Engineering, will head a study on the development of the University of Florida's Science and Technology Center, financed by a Ford Foundation grant of $75,000.

The study will be concerned with the establishment of an integrated center of science and technology in which all of the colleges will participate through teaching and research. As a first step toward bringing the scientific professions and the pure scientists into closer relationship, the university will install a group of nuclear facilities, including a training reactor.

Dean Saville retired as dean at NYU in 1957 and is devoting much time to consulting engagements in hydraulic and sanitary engineering.

Careers

Public Works

Norman W. Krapf has been named second district engineer for the New York State Department of Public

To Best Meet Fencing Needs

PAGE chain link **FENCE**

offers the Widest Choice

You can choose from

—8 Fence Styles
—8 Fence Heights
—4 Fabric Metals
—2 Types Metal Posts
—Top Rail or Top Wire
—Single or Double Extension Arms
—6 Gate Styles, Many Widths

• PAGE provides a wider choice of long lasting fence fabric metals. Each has characteristics which meet individual preferences or make it more suitable to meet certain climatic or service conditions.

Galvanized Steel • Woven of time-proved open-hearth steel wire, hot-dipped galvanized after weaving to assure long service.

Aluminized Steel • By a PAGE patented process a coating of commercially pure aluminum is bonded to steel wire to provide longer corrosion resistance, yet its cost is comparable with fence fabric having shorter life expectancy.

Aluminum • Another metal in non-corrosive class. It will not rust, will not discolor materially under unfavorable conditions. Semi-flat weaving gives it exceptional strength.

Stainless Steel • This chrome-nickel fabric is immune to practically all corrosive elements. Advantageous near salt water and where air is laden with smoke, sulphur and other factory emissions.

Nation-wide Erecting Service • In more than 100 districts there are local, responsible members of Page Fence Association—the largest fence engineering, erecting and servicing organization. These experts own their own plants and equipment, carry complete stocks of PAGE FENCE materials, and operate crews of trained workmen. Each firm is permanently located and has lasting interest in every job it handles.

Write for file-size folder containing full information and name of member nearest you. Address—

PAGE FENCE ASSOCIATION
Dept. E • MONESSEN, PA.

A PRODUCT OF PAGE STEEL & WIRE DIVISION AMERICAN CHAIN & CABLE COMPANY, INC.

Works at Buffalo. He was formerly chief design engineer at the Rochester district.

Ralph W. Peters, Defiance, Ohio, secretary-treasurer of the 15 county Maumee Watershed Conservancy District, has been named executive secretary and watershed planner of the Ohio Water Survey Committee.

John B. Boyanchek was appointed engineer on the Alaska Department of Health, Sanitation and Engineering staff.

Elmer F. Stansberry, former engineer with Ralph L. Woolpert Co., Dayton, Ohio, has been named administrative assistant to the city manager of Dayton. He succeeds **Earl Sterzer,** newly appointed Dayton urban renewal administrator.

D. Jack Lemon has been appointed city engineer for Adrian, Mich. He formerly was assistant city engineer and director of public works in Delaware, Ohio.

Albert L. Barry has resigned as a regional planning official in Columbus, Ohio, to become senior planner for St. Petersburg, Fla., effective March 3.

Frank B. Durkee has been appointed a member of the Sacramento Redevelopment Agency. He retired January 1 as state director of public works.

Col. William F. Powers has been assigned as Philadelphia District Engineer, Corps of Engineers. He was in charge of the relief and recovery operations in the North Atlantic and New England areas after the disastrous hurricanes of 1955.

Walter J. Finnell has become assistant superintendent of the Tacoma, Wash., water division, transferring from Tacoma City Light after two years as assistant chief civil engineer for the Cowlitz River power project, which has been delayed.

Herbert A. Bogard, an engineer with the Indiana State Department of Public Works and Supply, has been appointed highway superintendent in Marion County (Indianapolis), succeeding **James S. Gullion,** who has resigned.

Evan H. Gardner, of Philadelphia, will head a new division of advance planning, and **Joseph R. McMurtry,** of Pittsburgh, will head a division of economic research, within the newly established office of Planning and Research in the Pennsylvania Department of Highways. Mr. Gardner was formerly engineering projects coordinator for the Philadelphia Department of Streets, and Mr. McMurtry, a planner and landscape architect, has been with the Pittsburgh Department of City Planning since 1944.

Sanford Getrue has been appointed city planning director for Syracuse, N. Y. He formerly held the same post in Rome, N. Y.

Norman E. Tucker has been made city manager of Newark, Del. He previously was city manager of Raton, N. M. He was once head of the engineering department at Pueblo College, Pueblo, Colo., and had headed his own engineering company.

Melvyn T. Pugatch has been appointed consultant to Baltimore's Urban Renewal and Housing Agency. He will take charge of the agency's conservation and rehabilitation program. Mr. Pugatch, a Baltimore builder, will take the post on a part-time basis for one year.

Robert B. Bradford has succeeded **Joseph T. Bill** as executive director of the Sacramento Redevelopment Agency. Mr. Bradford is a former regional director of properties for the U.S. General Services Administration in San Francisco. Mr. Bill resigned to assume his new duties as executive director of the Los Angeles Community Redevelopment Agency.

Charles Lowrey Oswald, of Washington D. C., has been named deputy commissioner of the Urban Renewal Administration. He retired recently as assistant vice president of the Chesapeake and Potomac Telephone Co. after 41 years of service.

E. E. Thomas, formerly design engineer for the Washington State Toll Bridge Authority, has been appointed project manager for the Hood Canal bridge to be constructed for the Authority.

G. T. Shrum has been appointed assistant state construction engineer in the Wyoming Highway Department, replacing **Al Gardner,** who earlier was appointed coordinating engineer upon retirement of **Talcott Moore.**

Albert C. Spann, division engineer with the Bureau of Public Roads in Cheyenne, Wyo., is being transferred to Lincoln, Neb., to head the Nebraska division. He will be succeeded at Cheyenne by **J. L. Schoettler,** district engineer at Ames, Iowa.

The Columbus City Planning Commission has three new members. They are **Anthony DeGiralomo,** former chief building inspector; **Milton E. Miller,** consulting engineer; and **Richard L. Tully,** architect.

Arthur I. Flaherty, Civil Engineer Corps, USN (Ret.), has been appointed executive secretary of the Board of Registration for Civil and Professional Engineers of the State of California.

William R. Lindsay, Jr., a registered civil engineer, has been appointed chief, Division of Buildings, Philadelphia Departments of Licenses and Inspections. He will supervise three sub agencies

John Cameron Swayze, noted TV, radio news analyst, says: "I drove the new-type, *sound-conditioned* concrete—and couldn't believe my ears! It's bringing the riding comfort of 1975 *now.*"

Bob Crosby, popular bandleader and TV MC, says: "For my money, this new-type, *sound-conditioned* concrete gives the sweetest ride yet! It's smooth—no thump on this continuous-laid concrete."

Well-known personalities help make the news of concrete highways more lively for millions

Well-known and well-liked spokesmen featured in Portland Cement Association's colorful advertising are telling a warm and fascinating story of today's big news in highways. It's the story of important advances in concrete pavement design—pioneered by highway engineers.

It's the story of quiet-riding sawed joints, of air entrainment and of the granular subbase—a story long familiar to engineers. But it needs telling to the driving public—those who benefit most from the comfort, safety and durability of modern concrete.

And an interested driver population solidly behind your highway program can help speed the job . . . particularly in the case of the Interstate System.

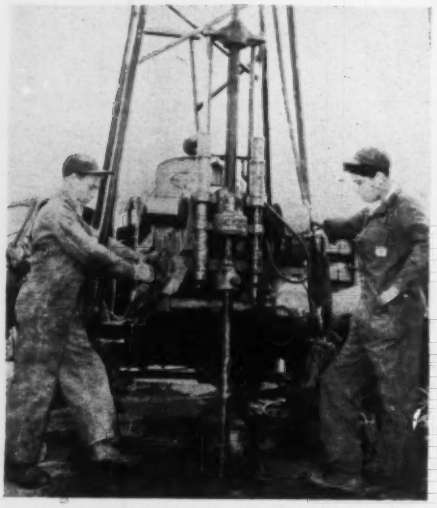
PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

NEW-TYPE Concrete

acker core drills

do the "underground work" wherever highways are underway!



Contractors FROEHLING & ROBERTSON, INC., of Baltimore own the trailer mounted Acker TH Core Drill shown above. It is doing test boring for the new Cumberland Highway.

Wherever highway construction is underway, you will find Acker Equipment engaged in "underground" exploration work.

And, there's good reason!

Acker Rigs are compact, dependable and ruggedly built. Like the Acker TH Core Drill pictured, they can be furnished completely self-contained with water pump, derrick, cargo-type winch, choice of power plant and mounting on trailer, truck or jeep.

For the complete story on why Acker Core Drills are preferred by leading contractors and engineers, please write for Bulletin 30. ENR

ACKER DRILL CO., Inc.
P.O. Box 830 • Scranton, Pa.

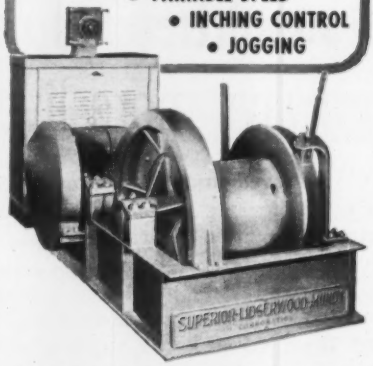
Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

RENT or BUY
STEEL SHEET
PILING
BY
DIALING

CHestnut 1-4474
Call St. Louis Collect
Any Job . . . Anywhere
QUICKEST SHIPMENTS

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
ST. LOUIS 1, MO.

STANDARD CARPULLERS
with special control
• VARIABLE SPEED
• INCHING CONTROL
• JOGGING



All supplied with the combination of a standard carpuller and AC-DC variable speed drive, the answer to your specialized carpuller requirements.

Write for New 24 page Bulletin C-616
"Carpullers for Easy Moving of Rolling Loads"

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION

Main Office and Works: SUPERIOR, WISCONSIN, U. S. A.
New York Office, 7 Dey Street, New York 7, N. Y.

charged with enforcing laws relating to zoning, building, construction and mechanical services.

Martin L. Beck, an associate member of the firm of Kelly & Gruzen, Architects–engineers of Newark, N. J., has been appointed to the New Jersey State Board of Architects for a five-year term.

Lawrence M. Irvin, slum clearance director for the city of Columbus, Ohio, has resigned to accept a position as planning director of Minneapolis, effective March 1.

In Washington, two new county engineers have been named. They are **Don Akins,** who has been appointed Kittitas County engineer at Ellensburg, and **Arthur G. Ward,** who has been promoted to Thurston County engineer at Olympia from his former post of assistant engineer.

Louis E. Wooten of Raleigh and **John Dargan Watson** of Greensboro have been appointed members of the North Carolina State Board of Registration for Engineers and Land Surveyors.

Herbert C. Wieland, former director of planning for St. Lawrence, Mass., has been named city planning director at St. Paul, Minn. He replaces **C. David Loeks,** who will become director of the Metropolitan Planning Commission in the Twin Cities area.

Jean C. Esh has been appointed a bridge designer for Pennsylvania State Highways Department in Harrisburg.

R. D. Connell, formerly with Harold Hoskins & Associates, Greeley, Colo., has been appointed city engineer at Riverton, Wyo.

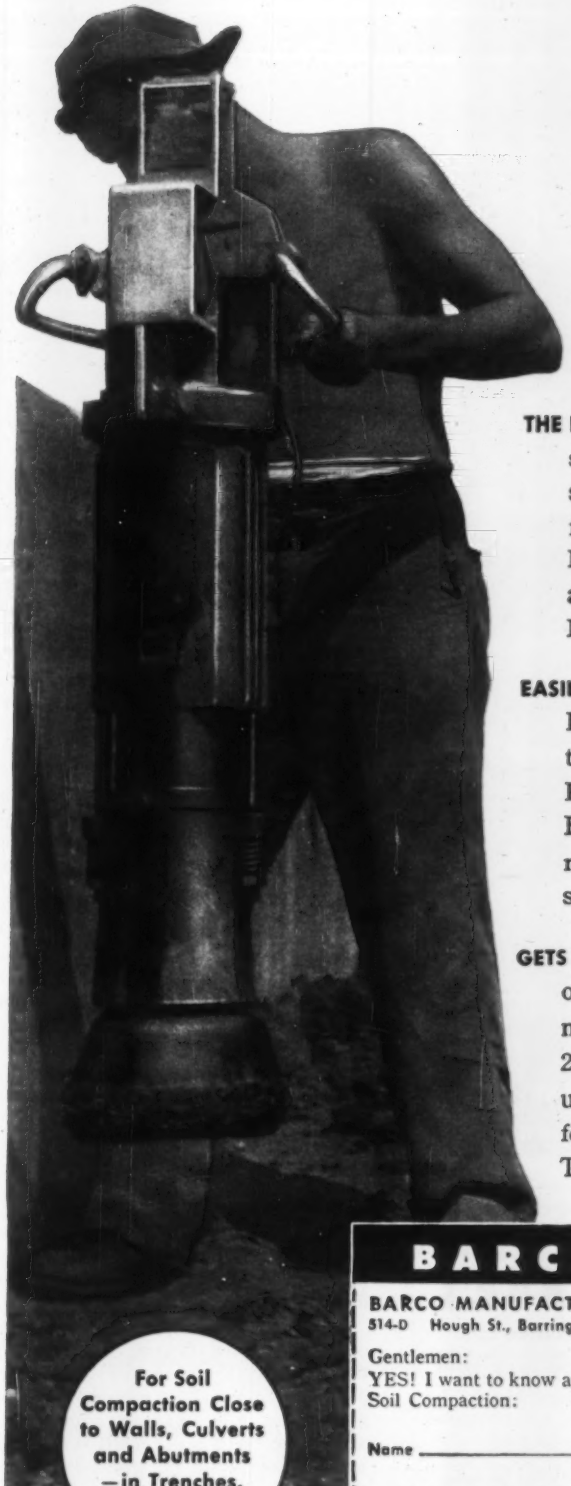
Carl E. Bentz, formerly chief of the architectural section of Tibbals, Crumley & Musson of Columbus, Ohio, has been appointed state consulting architect of Ohio. He replaces **Harry G. Allen,** who retired after 15 years in that position.

Carl E. Rantzow, chief of the real estate division, southwestern office of the U. S. Corps of Engineers, has been appointed regional director of public buildings service for the General Services Administration at Atlanta. He will supervise all public building programs, including design, construction, maintenance and operation of federal facilities in a seven-state area.

Staffing is underway for the public works section of the reorganized Colorado State Planning Division. **Otto H. Hall** has been appointed chief engineer; **Otto Brandenberger,** principal architect; **Guenther G. Rahm,** building construction and maintenance engineer; **Clarence W. Dinsmore,** construction and maintenance supervisor; and **Louis W. Carter,** mechanical engineer.

G. Holmes Perkins is the new chairman of the Philadelphia Planning Com-

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION



BARCO is the ANSWER!

THE KEY TO BETTER CONSTRUCTION—No recent trend in construction has had a more phenomenal growth than the specification of HIGH DEGREE SOIL COMPACTION for all kinds of projects—Atomic Energy, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Airports, Bridges, Buildings, and Housing Developments!

EASILY MEETS RIGID SPECIFICATIONS—In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful for compacting fill in restricted areas. ONLY the Barco Rammer can produce specified high degree compaction on lifts up to 20 inches.

GETS JOBS FINISHED ON TIME—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. *When time is at a premium,* BARCO IS THE ANSWER—find out about it NOW!

For Soil Compaction Close to Walls, Culverts and Abutments —in Trenches, Ditches

BARCO *GASOLINE* RAMMER

BARCO MANUFACTURING CO.
514-D Hough St., Barrington, Illinois

Gentlemen:
YES! I want to know about Barco Rammers for Soil Compaction:

Name _____

Company _____

Address _____

PRODUCTS BACKED BY EXPERIENCE
BARCO
ANNIVERSARY
1908 50TH 1958

mission, succeeding **Albert M. Greenfield,** who resigned. Mr. Perkins, who has been commission vice chairman, is dean of the University of Pennsylvania's School of Fine Arts and is a professional architect and planner. **William F. Kelly,** president of Philadelphia's First Pennsylvania Banking and Trust Co., was appointed to replace Mr. Greenfield as a commission member.

J. E. Hughes, vice president of Henry J. Kaiser Co., Oakland, Calif., has been appointed assistant general manager of the Kaiser Engineers Division. He will be responsible to the general manager for activities of Kaiser Engineers and its subsidiary companies in the U.S. and Canada, including design, engineering and construction services to the steel, petroleum, nuclear, chemical, power and mineral industries.

H. D. Carlson has been named business manager of Twaits-Wittenberg Co., a southern California construction-engineering firm. A civil engineer, he has been with the firm since 1940, and has supervised such jobs as the Los Angeles Police Facilities Building, the Marine Corps training facilities at Twenty-nine Palms, and the missile test facilities at Pt. Mugu.

The Aluminum Company of America has announced three appointments in its headquarters engineering department in Pittsburgh. **B. J. Fletcher,** formerly assistant chief engineer, has been named general manager of engineering. **L. B. Kuhns,** formerly assistant chief engineer, has been appointed chief engineer. **H. F. Robey, Jr.,** formerly assistant chief construction engineer, has been named chief construction engineer.

Herman B. Block has been named an executive vice president of Merritt Chapman & Scott Corp., responsible for procurement, trade relations and insurance. **Louis Goldberg** succeeds Mr. Block as vice president for procurement.

Ralph W. Olmstead, vice president and a director of H. K. Ferguson Co., Cleveland, has been appointed executive vice president. **James R. Fraser** has been named vice president, engineering, and **William E. Hark,** vice president, construction. Mr. Fraser has been the firm's chief engineer, while Mr. Hark has served as general construction manager.

William S. Pollard, Jr., chief engineer of Harland Bartholomew & Associates, has been made a full partner in the organization which is engaged in civil engineering, city planning, and landscape architecture. **Donald Wolbrink,** resident planner of the firm's Honolulu office also was made a partner.

Ralph H. Gloss has been elected a vice president of Timber Engineering Co., Washington, D. C.

NEW STAR in the MILLER
GOLD STAR LINE

The revolutionary dc welding performance achieved by the new Miller Gold Star transformer, completely sealed, semimetallic rectifier and weld stabilized circuit is now available in the SRH models. Developed specifically to save room, the SRH is only 30¼" high, offers 200, 300 and 400 ampere machines ideally designed for stacking or paralleling in minimum space.

Complete particulars on the new Miller GOLD STAR SRH will be sent promptly on request.

miller ELECTRIC MANUFACTURING COMPANY, INC.

Distributed in Canada by Canadian Liquid Air Co. Ltd., Montreal • APPLETON, WISCONSIN

PHOENIX BRIDGE COMPANY

Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS

General Office and Shops
PHOENIXVILLE, PA.

Subsidiary—Barium Steel Corporation

FOUNDATION CONSTRUCTION BY

McKINNEY

DRILLING CO.
BOX 190—LOGAN 4-8373
NACOGDOCHES, TEXAS

CAISSONS
DRILLED & UNDERREAMED
PIERS

WIRE OR PHONE FOR A QUOTATION ON YOUR NEXT FOUNDATION JOB
ANYWHERE IN THE WORLD

OFFICES IN
ATLANTA, GA. • PITTSBURGH, PA.
WASHINGTON, D. C. • CLEVELAND, OHIO

"a ticklish job... demanding pin-point control"

Says **Del Newell,**
Job Superintendent, TOWNSEND AND BOTTUM, INC.

Working side-by-side, two Manitowoc 60-ton cranes placed 142 ft. long trusses 100 feet high at the Dan E. Karn Power Plant of the Consumers Power Company project near Essexville, Mich.

"Although hampered by constant winds blowing off Lake Huron—sometimes as high as 40 mph," Mr. Newell said, "The team of Manitowocs, equipped with 120′ booms and 30′ jibs, lifted the heavy trusses to the 100′ height, held, walked and positioned them to the point where the steelworkers could bolt them into place. Since the structural unit was too large for the men to move, they depended entirely upon the crane's precise controls to line up the bolting holes."

Ticklish jobs like the Dan E. Karn project are everyday jobs for Manitowocs. Equipped with torque converter, the precise lifts are smooth and fast . . . operators have easy, fraction-of-an-inch control, yet never lose the "feel" of the machine.

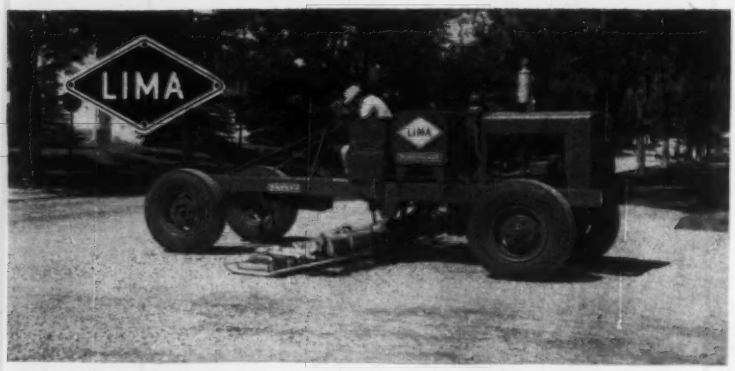
The unusual stability of these cranes contributes to the ease of making high, heavy lifts, as well as to the safety of such lifts. A low center of gravity and balanced design, give the unit extremely solid footing and equal load distribution.

There is a Manitowoc for every construction job . . . your distributor can give you details on the full range of Manitowocs and show you units that will make your jobs easier and more profitable.

Manitowoc

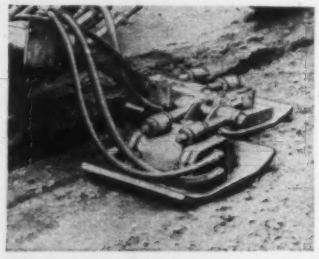
MANITOWOC ENGINEERING CORP.
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	½-YD. - 5½-YD.	½-YD. - 6-YD.	½-YD. - 2½-YD.



LIMA ROADPACKER

No other compacting equipment is designed so completely for high-density consolidation of single course *Macadam Bases, Gravel Subbases* and *Soil-Cement Bases*



Widener Attachment—Vibrating shoes compact material in widening trench while Roadpacker runs on existing pavement. Easily adjusted for various width trenches.

Six 420 lb. shoes provide the vibrating and tamping action. The LIMA ROADPACKER is a cost-cutting, vibratory compactor that penetrates deeper and covers a 13-ft., 1-in. width. The shoes are raised and lowered hydraulically; compacting is done equally well forward or in reverse. The ROADPACKER travels to the job at 28 m.p.h.

Get the full story on the LIMA ROADPACKER today. See your nearby distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

ROADPACKER FEATURES

- **Low maintenance**—*Rugged vibrator shoes are pressure lubricated and actuated hydraulically through a completely sealed system. There are no exposed moving parts, no oil levels to check, no breather holes through which oil can escape.*
- **Fast and maneuverable**—*Highway speeds up to 28 m.p.h., reverse speeds up to 7 m.p.h. Steers easily. For work in tight places, can be operated with only four shoes. Shoes can be folded up easily and need not be removed.*
- **Easy to operate**—*Operator is above dust, away from engine heat and exhaust for maximum comfort and efficiency. He has excellent visibility . . . controls are readily accessible.*

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment
5819

GUNITE
Since 1915
CONCRETE
SAND AND CEMENT
"Placed by Air"

We have the equipment, personnel and experience to complete GUNITE work anywhere.

Send for specifications and bulletins

GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD. KANSAS CITY 5, MO.
2016 W. WALNUT ST. CHICAGO 12, ILL.
1004 MARKET ST. ST. LOUIS 1, MO.
3200 HOUSTON AVE. HOUSTON 9, TEXAS
1134 N. ORANGETHORPE, FULLERTON, CALIF.
Milwaukee, Wis. Detroit, Mich. Denver, Colo.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Belliron
STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops: Eddystone, Pa.—Philadelphia, Pa. Royersford, Pa.

22nd St. & Washington Ave. Philadelphia 46, Pa. Main Office

New York Office 44 Whitehall St. N. Y. 4, N. Y.

Books

Stresses and Strains

STRENGTH OF MATERIALS, by F. R. Shanley. 783 pp. McGraw-Hill Book Co., New York, Toronto, London. $8.50.

This textbook, dealing with both the elastic and inelastic behavior of materials under load, offers a new approach to the teaching of strength of materials and covers more of the subject than most texts.

Principles of statics and relationships between forces and deflections are developed immediately. St. Venant's principle is introduced in the first chapter, calling attention to the substitution of abstractions for reality and the possible effects of such substitution. Also, energy theories are developed and put to use from the beginning.

"Each subject," the author says, "has been developed to a point where further refinement appeared unnecessary from the engineering viewpoint, or where it would have been necessary to employ mathematical methods normally beyond the training of the student. Another limitation on scope is that, in general, only the basic componenas of structures are treated (tension members, beams, columns, etc.). The analysis of indeterminate framed structures, for example, is left for specialized courses in this field. The experimental aspects of strength of materials are also omitted. . . ."

The author tends to encourage use of the actual stress-strain diagram of materials in predicting behavior of structural components. He also introduces the elements of probability theory, as it applies in this field.

Topics not previously treated in similar books include: statics of two-dimensional force fields, calculation of residual stresses and springback in inelastic bending.

Steel, Aluminum Design

DESIGN OF STEEL STRUCTURES—E. H. Gaylord, Jr., and C. N. Gaylord. 540 pp. McGraw-Hill Book Co., New York, Toronto, London. $8.

Intended for use in civil engineering courses in structural design, this book not only covers design of steel building frames and bridges but also aluminum. Throughout, it encourages an understanding of the basic philosophy of design.

A useful feature of the book is the discussion of relevant theory accompanying each topic. Thus, fundamentals of strength of materials are reviewed and frequent reference is included to topics in elastic and plastic buckling.

In addition to chapters on subjects usually included in books of this type, such as tension and compression members, beams, plate girders and connections, the book also offers an introduction to plastic design of steel. For design examples, the authors use a plate girder bridge built for the Pennsylvania Railroad Co., truss and approach spans of a highway bridge in Maryland and the wind bracing for Lever House in New York City.

Businessman's A-Power

Economics of Atomic Energy—By Mary Golding. 179 pp. Philosophical Library, 15 E. 40 St., New York 16. $6.00

The author is a well informed Britisher who has no official connection with her country's atomic energy industry. She is able, therefore, to write freely, albiet from a strictly British viewpoint as regards the different courses her country and the U. S. have taken to develop a nuclear power industry.

Economics of Atomic Energy deals exclusively with the business side of electric power generation from nuclear station—the investment needed, the parameters of competitive A-power and the interaction of public and private enterprise. Any person knowledgeable of business patterns and only the basics of atomic energy will be able to gain an illuminating perspective of the often confusing nuclear power business as under way in Britain and the U. S.

Miss Golding has succeeded in putting all the pieces together in easily understandable manner. She is especially successful in explaining the reasons why Great Britain has gone ahead with a large scale program based on the simple reactor type using natural uranium while the U. S. looks to reactor types utilizing enriched uranium. And she implies that the increased efficiencies of enriched-fuel reactors may be illusory when stacked up against hard costs.

This book is recommended reading for those with a business interest in nuclear power—and this includes U. S. construction and engineering firms.

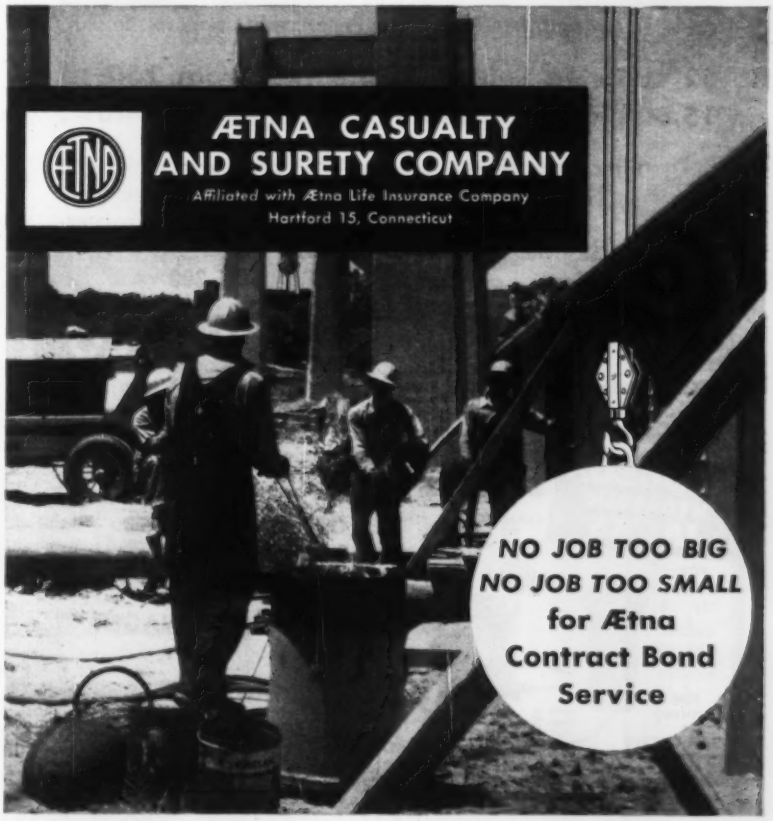
Pump Operation

Pump Operation and Maintenance—by Tyler G. Hicks, 275 pp., McGraw-Hill Book Co., 330 W. 42 St., New York. $9.00.

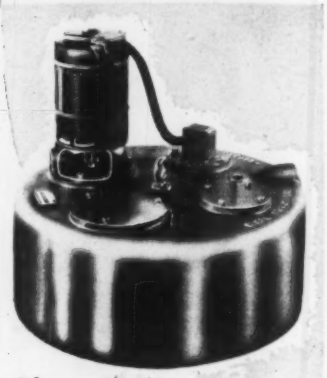
Operation and maintenance of pumps used in industrial, municipal, central station, marine, institutional, and similar installations is set forth in this book. It includes information that supervising engineers, operators, and maintenance personnel need to know throughout the life of the pump.

F/S OPTICAL THEODOLITE
Model 4150 NE
This versatile Theodolite is designed for easy operation and high accuracy. Its spindle rotates on ball bearings and can be released from the tribrach for interchanging with auxiliary equipment.
• Both circles viewed simultaneously
• Independent scales allowing estimation to 6 seconds at a glance
• 30X Telescope, coated optics
• Self-checking Optical Plummet
• Single-lever repetition control
• Servicing by factory specialists
F/S offers a complete line of high quality engineering instruments. Ask your nearest dealer or write today for detailed literature.
126
220
FILOTECNICA SALMOIRAGHI, INC.
41-14 24th St., L. I. C. 1, N. Y.
"DEALERS' INQUIRIES INVITED"

F/S DISTRIBUTORS: The A. Lietz Co., San Francisco and Los Angeles, Calif.—National Blue Print Co., Chicago, Ill.—Watts Instruments, Columbus, Ohio—Geo. F. Muth Co., Inc., Wash., D. C.—CANADA: Instruments 1951 Ltd., Ottawa, Toronto, Regina, Montreal



the weil TVC LOW RETURN Condensate Pump



- LOW RETURN CONNECTION
- LOW SPEED, LONG LIFE
- CAST IRON RECEIVER
- LOW WATER LINE

Three Sizes

10 GALLON RECEIVER

For single units. Diameter 21". Height of return above floor 6⅞".

15 GALLON RECEIVER

For single or duplex units. Diameter 25½". Height of return above floor 7-3/16".

26 GALLON RECEIVER

For single or duplex units. Diameter 25½". Height of return above floor 10½".

Single units in 15 or 26 gallon receivers can be converted to duplex units at any time when load increases. Additional pump is installed right on the job for there is no need to remove the unit.

32 Units to Select—Capacities from 750 to 15,000 sq. ft. E.D.R. Pressures 10# to 40#.

This compact receiver and sturdy pumping unit with 1750 RPM motor, assures a simple installation (only one return connection and one discharge connection and long trouble-free life.

Send for Bulletin TVC-300

STOCKED BY YOUR JOBBER

weil PUMP CO.

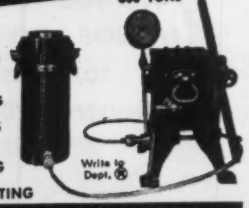
1528 North Fremont St. • Chicago 22, Ill.

DUDGEON HYDRAULIC JACKS

SALES RENTALS

• CAPACITY TO 600 TONS

FOR:
PILE TESTING
•
UNDER-PINNING
•
BRIDGES
•
PIPE PUSHING
•
SOIL TESTING



Write to Dept. ⓔ

RICHARD DUDGEON INC.

789 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

from
●
●
OFFICE MANAGER
●
to
●
GENERAL MANAGER
●
●

Yes, that is the quality of the personnel available to your organization through the Classified Advertising pages of ENGINEERING NEWS-RECORD.

Classified Advertising Division

ENGINEERING NEWS-RECORD

330 W. 42nd St. New York 36, N. Y.

. . . Books

Every major class and type of pump is covered, with specific, step-by-step instructions for installing, starting up, routine operation, periodic maintenance, and major overhaul.

Recent advances covered include barrel-type centrifugal pumps, operating and maintenance forms and scheduling methods, late developments in pump shaft metallizing, process-type centrifugal pumps, chemical-type centrifugal pumps, and a large number of metering and proportioning pumps.

Profusely illustrated, this manual contains photos, drawings, and detailed examples of procedures. A number of operating and maintenance forms, and summary tables, that show management personnel how to keep track of pump operating and maintenance history is included.

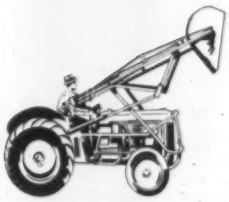
Author Hicks' two other published works are, *Pump Selection and Operation*, and *Plant Engineer's Easy Problem Solver.*

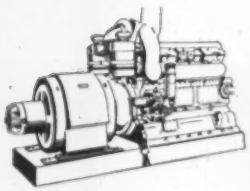
Books & Pamphlets

• **Highway hearings**—A motion picture (in color) aimed at creating public understanding of the federal interstate highway program was released for general showing by Dow Chemical Co. on February 15. The film, both entertaining and educational, is designed to help the public understand the program by portraying a typical public hearing in a typical community and highlighting the residents' reactions in terms of their personal interests. Modern Talking Picture Service, with libraries in 28 cities across the nation, is the distributor.

• **Prospective dam sites**—A report describing geological conditions at six prospective dam sites on the Flathead River downstream from Flathead Lake, Mont., has been released by the Interior Department. The river in the section under consideration has a fall of 175 ft. The sites reported are alternates and only two would be utilized. The investigations were conducted as part of the U. S. Geological Survey's program for evaluating waterpower and storage potential of streams on public lands. The report, "Geology of Power Sites on the Upper Tributaries of the Columbia River in Idaho and Montana, Part 4, Interim Report on Selected Power Sites Between Miles 36 and 72, Flathead River Below Flathead Lake, Lake and Sanders Counties, Montana," is available in Room 1033, General Services Building, Washington 25, D. C.

YOUR SMALLER DIESELS CAN BE TURBOCHARGED, TOO ...AT LOW COST!





New AiResearch T-7 turbocharger is designed for diesels with naturally aspirated ratings of from 80hp to 130hp, will increase power up to 50%

A typical AiResearch T-7 installation will give a 900 lb. engine the power of a 1400 lb. engine with greatly reduced specific fuel consumption. It not only increases your payload, but, because it makes your diesel run cooler, it actually extends engine life.

Its low cost, small size, high output and extremely light weight make it the first practical solution to the turbocharging of low horsepower diesels.

Like all AiResearch turbochargers, the T-7 is air-cooled (making no demands on the cooling system of your engine), reduces noise and smoke and maintains sea-level power at high altitudes. Installed on your small diesel, it means smaller initial cost and lower operating costs than those of any naturally aspirated diesel of comparable output.

Your inquiries are invited.

BASIC SPECIFICATIONS FOR AIRESEARCH TURBOCHARGERS

MODEL	T-7	T-10	T-14	T-30
Output — lb/min. (Standard Conditions)	15-30	29-51	30-60	50-100
Diameter — in. nom.	8.5	10.0	11.5	15.1
Length — in.	8.5	10.5	12.9	14.7
Weight — lb.	24.0	40.0	95.0	112.0

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 South Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

The Year Advertising Helped

This editorial message was first published by McGraw-Hill two years ago. It describes advertising's dramatic contribution to the American economy during 1954. The theme of the editorial—that advertising can help promote economic stability by stimulating sales at a crucial time—is even more pertinent today.

As our economy grows, it is constantly changing. The conditions business faces today are not the same in every respect as those it faced in 1954. But business again has the opportunity, through advertising and other selling efforts, to help sustain a high level of economic activity. At the same time, it will be building markets for the period of renewed expansion that is sure to follow.

This editorial is reprinted exactly as it appeared in 1956 except for minor editorial changes to bring it up to date. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw

PRESIDENT
McGraw-Hill Publishing Company, Inc.

IN 1954 we had a business recession in the United States. Sales fell about 4% during the year. If management had followed the historic pattern of business ups and downs, advertising volume would have fallen much further.

But in 1954 the volume of advertising did not fall. It increased over 5%, and expenditures in all major advertising media rose. Every effort was made to stimulate sales when sales were needed to sustain prosperity.

This was something entirely new under the sun. It had a powerful influence in making the recession of 1953-54 one of the mildest on record. It helped greatly to speed business on to the record-breaking levels it attained in the years 1955-57.

There are several reasons why America's business management attacked this decline in sales with more advertising. One of them grew out of the greatly strengthened position of the American consuming market. Consumers' income after taxes has been rising an average of over $10 billion a year since 1946, and this rising income is more widely distributed than ever before. Furthermore, consumers had piled up reserves of about $200 billion in cash or its equivalent. These reserves offered a new and powerful inducement to increased selling and advertising effort even in the face of a possible decline in consumer income. (At the end of 1957, consumer reserves were $225 billion.)

Taking the Longer View

However, the principal reason why a sales decline was attacked with increased advertising is management's new-found conviction that good advertising is essentially an investment in the development of a market. Successful development requires sustained investment. The inclination of business management to take this longer view is, of course, motivated

McGraw-Hill PUBLISHING COMPANY,

ABP HEADQUARTERS FOR

Kill a Business Recession

by the fact that the American market, with over 3 million consumers being added annually, is growing at a prodigious rate.

Ten years ago only a handful of companies had plans for investment in new producing facilities extending beyond the current year. Today almost all leading companies have investment programs running some years ahead. And keeping pace with these long-range investment plans has been the development of sales and advertising programs to reach tomorrow's greatly expanded markets.

Advertising's Key Role

This crucial role of advertising in providing driving power for our economy is gaining greater recognition every day. In his book, "People of Plenty," Professor David M. Potter of Yale University remarked: "Advertising is not badly needed in an economy of scarcity, because total demand is usually equal to or in excess of total supply, and every producer can normally sell as much as he produces. It is when potential supply outstrips demand—that is, when abundance prevails—that advertising begins to fulfill a really essential economic function."

Today abundance so completely prevails in the United States that it has been conservatively estimated that as much as a third of everything offered for sale falls in the realm of "optional consumption." That is, consumers can "take it or leave it" without any immediate personal inconvenience. But if they decide to "leave it," a terrific economic depression will not be far behind. In such circumstances, advertising—in which, in all of its forms, we are now investing over $10 billion annually—clearly is of crucial importance to our continued prosperity.

In performing its key role in past years, American advertising never realized its full potential. It successfully promoted sales. But it never was called upon to promote an overall economic stability as a direct outgrowth of increased sales.

By successfully promoting both sales and economic stability, as it did in 1954, advertising surely has added new strength to the American economy. It has also added a great new and constructive dimension to advertising itself.

One of the surest means of expanding your sales volume in today's industrial markets is through dominant advertising in the publications directly serving your major customers and prospects.

McGraw-Hill's business and technical publications can give you quick access to the men who initiate, specify and approve the purchases of industrial products and services. Because all are leaders in their respective fields, you are assured a maximum return on your advertising investment when you *concentrate* in the McGraw-Hill publications serving your most important markets.

INCORPORATED • 330 West 42nd St., New York 36, N. Y.

B U S I N E S S I N F O R M A T I O N

HOW TO HANDLE
WET JOBS

#37 of a Series

ONE LIFT REMOVES
18 FT OF WATER FROM
"PATCH-QUILT" SOIL

Sewage treatment plant, Clayton, N. J.
Contractor: C & T Affiliates, Inc.

SOIL on this job varied by area—fine silty sand here—coarse sand there—gravel a few feet away. This "patch-quilt" pattern precluded routine handling.

GRIFFIN engineers carefully planned proper installation for each wellpoint, using sand filters on some but not others.

This plus other special methods lowered the 18 ft of water with a money-saving single-stage wellpoint system. Top photo shows system placed directly at water level.

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

Separate Bids Taken on N. J. Sewer Joints

Plainfield, N. J. has awarded a $1,588,351 contract to Verona Construction Co., Verona, N. J., for a seven-mile extension of its South Side interceptor sewer. Reinforced concrete sewer pipe with rubber and steel joints will be used. Separate bids were taken on the pipe and on the joints.

The contract is 5.3% under the engineer's estimate. E. T. Killam Asso., Short Hills, N. J., are consulting engineers.

Concrete specifications require: for reinforced work, Class A, 3000 psi; for non-reinforced work, 1500 psi; compressive strength in 28 days.

The contractor furnishes all materials. Transportation to the site will be by highway.

This is how the bidding went:

1C	Verona Constr Co., Verona, N. J.	$1,588,351
2	Berlanti Constr Co., Harrison, N. J.	1,672,161
9	Tibbett Constr Co., Yonkers, N. Y.	2,094,575
EE	E. T. Killam Asso., Short Hills, N. J.	1,676,353

Bids: 9-3-57 Items	Unit	Quantity	Unit Prices 1C	2
Exc, earth, depth 0'-8'	cy	69,500	$1.00	$0.10
8'-12'	cy	18,100	3.00	0.10
over 12'	cy	8,000	6.00	4.00
rock, all depths	cy	5,000	5.00	10.00
Sheeting left in pl, timber	Mfbm	500	100.00	100.00
steel	t	15	425.00	400.00
Screened grav, incl exc	cy	20,000	5.00	3.50
Rubble, bank protection f	t	700	10.00	6.00
Vit tile underdr, excl of exc & broken stone, 6"	lf	2,000	3.50	5.00
8"	lf	2,000	3.50	5.00
CSP, reinf, 42"ϕ, std wall thick	lf	23,420	17.00	24.00
std wall thick	lf	2,800	20.00	26.00
hvy wall pipe	lf	1,830	28.00	29.00
36"ϕ, std wall thick	lf	8,250	15.00	21.00
std wall thick	lf	100	17.00	23.00
hvy wall pipe	lf	1,125	20.00	26.00
24"ϕ	lf	2,600	20.00	17.00
	lf	1,260	20.00	18.00
CPP, reinf, rubber & stl ring jts (50psi) 16' lgths, 36"ϕ	lf	695	24.00	28.00
Vit tile pipe, ES, 10"ϕ	lf	110	16.00	12.00
8"ϕ	lf	700	16.00	11.00
Conc, incl forms, CI D	cy	100	30.00	35.00
A	cy	25	75.00	80.00
MH, brick or conc block depth up to 8'	ea	131	250.00	400.00
add'l depth to 12'	lf	300	40.00	50.00
over 12'	lf	120	60.00	65.00
Pavement, remov & restore penet macadam	sy	6,000	3.00	1.75
bit conc	sy	3,500	3.50	2.50
conc, incl reinf	cy	25	18.00	45.00
grav, cinders, road stone	sy	4,000	1.75	0.75
seal coat treat	sy	4,000	0.35	0.57
Restore & maint during constr, private property	ls	job	90,464	4,250
Cedar Brook Park	ls	job	10,000	10,000
Spec structs & stream Xings sta 232+62±	ls	job	7,784	4,000
270+28±	ls	job	5,961	2,500
404+80±	ls	job	5,948	2,500
419+80±	ls	job	2,897	1,000
meter chamber, sta 86+25±	ls	job	12,917	14,000
207+25±	ls	job	12,917	14,000
349+33±	ls	*job	14,500	17,000
Xing, stream, incl MH and pipe, sta 204+00± to 204+60±	ls	job	18,561	8,000
CRR, N.J., incl chambers and liner plate tunnel, sta 82+05± to 83+70±	ls	job	34,282	35,000
LVRR spur track, sta 101+32±	ls	job	1,909	3,500
Hwy #28, incl chambers and tunnel, sta 40+80± to 41+44±	ls	job	14,870	12,000
Swamp, sta 248+75 to 255+75±	ls	job	5,900	5,500
Conn to outfall chamber	ls	job	3,500	250.00
Pumping sta diversion, incl MH	ls	job	7,314	4,000
Creosoted timber piles	ls	job	5,634	4,500
caps & chocks	lf	3,000	1.50	3.00
	cap	60	40.00	55.00
Joints, add to price shown for pipe				
Rubber and stl joints 42"ϕ	lf	28,050	2.50	4.77
36"ϕ	lf	9,475	2.00	3.92
24"ϕ	lf	3,860	1.75	2.98

* Complete with recorder
Completion schedule: 365 calendar days
Liquidated damages: $200/day

Baltimore Streets Get A Fast Resurfacing

A 35 day completion schedule, with working hours restricted to 9:30 AM to 4:00 PM to minimize interruption of peak traffic, sets the pace for this $114,990 contract to Baltimore Asphalt Block & Tile Co. It is for resurfacing streets in widely scattered areas of Baltimore. Pavement is 1 in. asphaltic binder and 1 in. sheet wearing surface, on existing pavement, with high early strength concrete required for the base course.

The award is 2.5% above the estimate by Baltimore Bureau of Highways, and 4.9% below the high of six bids.

Portland cement concrete must attain a minimum strength of 3,600 psi in 28 days, and contain not less than six bags of cement per cu yd of concrete. High early strength concrete must test at 3,600 psi, or more, in seven days. The water ratio is not more than 5.5 gal per bag of cement, and the ratio of fine to course aggregate approximately 33%.

Minimum wages range from $1.35 for common, through $1.45 for semi-skilled, to $2.00 for skilled laborers. But common labor and truck driver rates are $1.975; tractor operators, $2.70; air tool operators, $1.77.

The six bids went like this:

1C	Baltimore Asphalt Block & Tile Co., Baltimore	$114,990
2	Mahoney Bros, Baltimore	119,133
6	The Potts & Callahan Paving Co., Baltimore	120,988
EE	Baltimore Bureau of Highways	112,165

Bids: 12-4-57 Items	Unit	Quantity	Unit Prices 1C	2
Sht asph pave, conc binder 2" in railway area	t	270	$15.75	$15.96
1" wearing surface	t	145	19.40	19.95
Cement conc, HES, base crse around MHs, etc	cy	50	105.00	104.80
Soil stab matls, incl remov old matls	cy	25	6.00	6.40
Cement, HES conc base crse	cy	50	45.00	45.30
Strip old bit paving mtls & other wear surf	sy	4,100	1.98	2.03
Asph conc binder, 1"	t	3,450	13.00	13.70
Sth asph wear surf, 1"	t	2,660	16.45	16.95
Cement conc curb, 6"x20"	lf	1,050	3.38	3.42

Completion schedule: 35 days
No work on Holliday St. prior to Mar. 15
Liquidated damages, $50/day

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last: Feb. 13; Next, Mar. 13
- Wood Products, Glass, Explosives, Chemicals: Last, Feb. 20; Next, Mar. 20
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Feb. 27; Next, Mar. 27
- Wage Rates, Building Board, Lath, Insulation: Last, Feb. 27; Next, Mar. 27

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in." truckload del." per block		CONCRETE Ready Mixed 1:2:4 del. 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.35am	$3.94am	$3.60m	$2.28	$2.28	$2.50‡	$2.18	$2.33	$1.55	$1.65	$0.175	$ .21	$14.50g
Baltimore	4.45a	4.05a	3.52a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.30/13.80
Birmingham	4.23	3.30f	....	2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	.18	.18	12.55
Boston	5.80ei	4.74a	4.79e	3.00am	3.00am	3.00am	1.75am	1.85am	....	....	.23	.275a	15.00h
Chicago	4.13ag	3.87a	3.90/3.95	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.25	.25b	14.00p
Cincinnati	4.50r	4.05c	4.05c	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	1.89	1.89	.19	.24a	13.25
Cleveland	N.A. in C.L.	....	3.88c	2.25ef	2.10f	1.75	4.50‡a	4.50‡a	3.45‡a	3.45‡a	....	.20	16.15
Dallas	3.55a	3.15a	3.43	2.60	2.65	1.90	2.43	2.63	....	....	....	.27	12.00
Denver	4.79a	4.29a	4.79	1.90	2.05	1.20	....	....	....	....	.22	.245a	10.70
Detroit	4.10a	3.60ag	3.73ag	4.50‡b	4.50‡b	4.25‡b	3.75‡	3.75‡	3.50‡	3.50‡	.23	.24a	14.20
Kansas City	4.25aR	3.81a	3.98aR	....	....	1.70‡a	2.00‡a	2.00‡a	....	....	.22a	.26e	13.25
Los Angeles	5.12eh	4.68eh	5.60	3.56‡a	3.76‡a	2.41‡a	2.41‡a	2.46‡a	....	....	.14fm	.24m	13.96ih
Minneapolis	4.44a	4.04a	4.10a	3.70‡ag	3.70‡ag	1.80‡ag	3.75‡ag	3.75‡ag	....	....	.19	....	14.30f
Montreal	3.21d	2.96d	3.60	1.90‡a	3.15‡a	2.25‡a	1.90‡x	2.15‡x	2.00	2.00	.20	.20a	10.80ek
New Orleans	3.75a	3.45a	3.70	3.44	2.44	2.00	....	....	1.45	1.65	.275	....	13.65
New York	4.83a	4.42a	3.72	3.20bk	3.20bk	2.30bk	3.10bl	3.10bl	....	....	.250m	.276b	17.40mn
Philadelphia	4.57‡a	4.16‡a	3.61‡	2.85‡a	2.85‡a	2.35‡a	2.70‡	2.80‡	2.00	2.35	.25/.32	....	14.15do
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.60aq	2.60aq	3.00aq	2.00e	2.00e	2.20	3.20	.26	.28	15.80
St. Louis	4.16/4.48c	3.76/4.08c	3.86/4.18	3.25am	3.10am	2.40/3.10am	1.65j	1.75j	....	....	.24	.30e	12.65/13.15
San Francisco	4.09c	3.69c	4.53c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28el	12.75c
Seattle	4.27a	3.75a	4.45a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.26	.27c	13.90g
Toronto	4.03a	4.03a	4.03a	3.40‡	2.40‡	2.05‡	2.20	2.20	3.20	3.20	.26	.275e	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots *f Fob mill, add 14.58 to $21.31 per car switching charges *g fob mill + freight *h LCL. *i Less 2% disc, 10 days *j Truck lots, fob yard *k 100 bag lots *l over 150 sacks *m Incl. 4¢ Ga. frt. increase

SAND GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q fob yard

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Celocrete *e 8¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 18.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 28 cu. yds or more. *c 10-100 cy. brackets. *d 1-3 mi. zone. *e 2,000 lb comp. *f 2,500 lb. comp: *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2½:3½. *m F.o.b. yard. *n Plus escalator clause. *o Add 15¢ for ea. add'l 1-mi zone. *p Incl. 50¢ heating charge

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.30†	Buffington, Ind	$3.40†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.45†	Toledo, O	$3.45†
Clinchfield, Ga	3.45†	Independence, Kan	3.25†	Leeds, Ala	3.30†	Saginaw, Mich	3.45†	Milwaukee, Wis	3.50†
Kingsport, Tenn	3.45†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.45†	Green Bay, Wis	3.50†
West Des Moines, Iowa	3.50†	Northampton, Pa	3.35†	Hudson, N. Y	3.35†	Buffalo, N. Y	3.55†	Ironton, O	3.35†
Nazareth, Pa	3.35†	Universal, Pa	3.60†	Alpena, Mich	3.35†	Oswego, N. Y	3.60†	Montreal City	2.55†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.45†	Cleveland, O	3.50†	W. Winfield, Pa	3.60†
Leeley, Pa	3.35†	Giant, S. C	3.45†	Howes Cave, N. Y	3.35†	Alsen, N. Y	3.35†	Security, Md	3.35†

† *Prices to hold for first quarter of* 1958.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$30.50	$45.00	$0.15	$0.26	$0.125Pw	$0.28Pw	$0.14	$0.125	$0.30
Baltimore	180.00‡	.....	.....	23.00i	.....	.095i	0.185i	.10wE	.19wE	.10i	.105i	0.195i
Birmingham	.....	62.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.00ap	46.00ap	.24a	.46a	.11aPw	.24apPw	.11ao	.174aGo	.25aGo
Chicago	180.00‡	90.00‡b	3.95/4.00‡j	24.25b	34.25b	21.40bv	31.40bv	.11bwH	.19bwH	.085b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	89.50d	6.30g	26.50A	.....	26.50Av	.....	.1180AwF	.....	.....	.1180AG	.31AG
Dallas	s	40/63	s	26.35	45.39	.1116	.1944	29.85	51.40	.1080	.1116	.1944
Denver	.....	58.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	113.00	.....	29.65	.....	29.65v	.....	12.85I	.....	.1026	.....	.25
Kansas City	s	s	s	18.00cl	.....	18.00v	.....	.0825cwJ	.....	.0925c	0.125v	.....
Los Angeles	s	.....	s	22.50dms	.....	22.50dvz	.....	24.00dz K	.....	23.00dv	.1038j	.2038j
Minneapolis	.....	.....	3.73h	26.50	.....	29.50v	.....	0.115w	.....	0.105	.134	.....
Montreal	s	s	s	32.50m	44.80m	.176m	.226m	18.70nwE	23.70nwE	.154m	.242ns	.27ns
New Orleans	.....	.....	.....	20.00e	.....e	20.00ev	.....e	.095ew	.....e	.088B	.095BL	.....
New York	.....	.....	3.70f	25.99m	47.94m	25.99nt	47.94nt	11.61wF	21.01wF	.....	11.63u	21.11u
Philadelphia	175/185	110/120	4.08	24.00	.....	24.00	.....	.11wF	.....	.105	.....	.....
Pittsburgh	60.00k	99.12ln	6.35	32.40i	.....	32.40iv	.....	.1411i	.....	.141i	.1411i	.....
St. Louis	.....	.....	.....	22.80f	.....	.1825	.....	.1035fwM	.....	0.165	.825	.....
San Francisco	.....	70.00e	.....	24.50g	41.50g	25.50gkv	41.50gkv	25.50gN	43.00gN	25.25eg	25.50yv	.2063g
Seattle	.....	.....	.....	27.00a	42.00A	27.50a	.....	28.50K	.....	26.25kv	25.50kv	46.10kv
Toronto	.....	125.50	4.50f	40.10	59.38	0.2005	0.2445	0.214w	0.258w	0.198	0.216	.271

‡ Delivered.

PAVING BRICK & BLOCK: *b 3 x 3¼ x 8. *c 2¼ x 8¼ x 4. *d LCL, truck deliveries. *e Not used. *f 2" interior 6# treat. *g 3" *h 2" tr, 8# *i 3 x 3⅝ x 8½. *j 2½", 8 lb. tr. *k Used. *l Redshale; *m Pine; oak $8.57. *n Truck del.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Wood River, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40/300 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC $0.095 *K MC 3, 4 & 5. *L MS. *M MC 1-5, RC 1-5, $0.106. N MC 3. *O Truckload. *P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums. *Q F.o.b. Eldorado, ARK.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., Windsor**—PROCESSING SYSTEM, BLDGS.—BA · 3/10—Combustion Engineering, Inc., Reactor Devel. Div., Central Ave., Phase 2, 2 bldgs. and processing system, plant. $1,000,000. Hayden, Harding & Buchanan, 1340 Soldiers Field Road, Brighton, Mass., archts. CD 2/14.

▲ **Mass., Worcester**—HOSPITAL—BA 3/11—Trustees City Hospital, 71 Jaques Ave., hospital addns., alterations, 71 Jaques Ave. $3,000,000. Extended date. Isadore & Zachary Rosenfeld and E. Todd Wheeler, 45 W. 45 St., New York, N. Y., archts. CD 2/24.

Mass., Southbridge—SCHOOL—BA 3/13—Roman Catholic Diocese of Worcester, 1 Tuckerman St., Worcester, high school for St. Mary's Parish. $400,000. Plans deposit $50. Wendell T. Phillips Assocs., 57 Prospect St., Milford, archts. CD 10/12.

BUILDINGS—SLC

Conn., Bloomfield—ENGINEERING, etc.—Kaman Aircraft Corp., Old Windsor Rd., soon lets contract engineering and administrative facilities, Blue Hills Ave. $425,000. Russell & Gibson, 1009 Farmington Ave., West Hartford, archts. CD 9/18.

HEAVY CONSTRUCTION—LB & CA

VERMONT—State Hys. Dpt., State Office Bldg., Montpelier,

Blow & Cote, Inc., Box 637, Morrisville, Vt. CA $509,795 hy. work Lanville County Rte. 15 Johnson Hardwick Rd. F 133 (4) F 39 (2) Hyde Park. Bids opened Feb. 7. CD 2/12, under LB.

RHODE ISLAND—State R. I. & Prov. Plants, Div. Purchase, State House, Providence, Bids opened 2/19,

Halloran Constr. Co., 1 Washington Ave., Providence, R. I. LB $768,437, est. $1,000,000, Bid 654 RI Contr. S-0257 (1) Hamlet Ave. Bridge, Hamlet Ave. to Manville Rd., Woonsocket. CD 1/31.

BUILDINGS—LB & CA

▲ **Aquadro & Corruti, Inc.**, Texas Rd., Northampton, Mass., CA Approx. $1,000,000, Married Student APARTMENTS (97 units), AMHERST, MASS. University of Mass., Alden C. Brett, pres. Bldg. Comn., Amherst, Mass. Bids Nov. 15. CD 11/19, under LB.

▲ **Poorvu Constr. Co., Inc.**, 192 Worcester St., Wellesley, Mass., CA $1,262,800, est. $1,200,000, SENIOR HIGH SCHOOL addn., alterations, ARLINGTON, MASS. Town, Supt. Schools, 23 Maple St., Arlington, Mass. Bids Jan. 30. CD 2/4, under LB.

▲† **Green Manor Constr. Co.**, Middle Turnpike East, Manchester, Conn., LB $5,917,000, Family Type HOUSING, Old Bedford and Nielson Rds. at Laurence G. Hanscom Field, IFB 19-604-58-62, BEDFORD, MASS. Contracting Officer, Air Force Cambridge Research Center, Laurence G. Hanscom Field, Bedford, Mass. Bids Feb. 18. CD 2/7.

▲ **James S. Kelliher**, 1245 Hancock St., Quincy, Mass., LB $1,191,414, ELEMENTARY SCHOOL, Martin District, Roxbury, BOSTON, MASS. City, Dpt. School Bldgs., 26 Norman St., Boston, Mass. Bids Feb. 19. CD 1/24.

▲ **E. H. Porter Constr. Co.**, 13 Wallis St., Peabody, Mass., CA $1,769,000, Regional JUNIOR HIGH SCHOOL, Endicott St., BOXFORD, MASS. Towns, Topsfield, Middleton and Boxford, c/o J. Harrison Holman, chn. Planning Comn., Main St., Topsfield, Mass. Bids Feb. 13. CD 2/19, under LB.

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass., CA Est. $5,000,000, DORMITORY "Eighth House" Dewolfe, Mt. Auburn and Plymouth Sts., CAMBRIDGE, MASS. Harvard College, Cambridge, Mass. CD 2/25, under LB.

J. L. Marshall & Sons, Inc., 560 York Ave., Pawtucket, R. I., CA $613,718, est. $600,000, DORMITORY No. 2 and new DINING HALL on Campus, NORTON, MASS. Wheaton College, Norton, Mass. Bids Feb. 14. CD 2/20.

▲ **J. J. Powers Co.**, 127 Aylewife Brook Parkway, Cambridge, Mass., LB $1,637,592, Regional HIGH SCHOOL, off Franklin St., WHITMAN, MASS. Towns, Whitman and Hanson Regional High School Bldg. Comm. c/o Supt. Schools, Whitman Ave., Whitman, Mass. Bids Feb. 20. CD 1/29.

▲ **A. F. Peaslee, Inc.**, 37 Lewis St., Hartford, Conn., LB $1,239,397 (7 bidders) Irving A. Robbins Junior HIGH SCHOOL, FARMINGTON, CONN. Town of Farmington, Town Mgr., Town Hall. Unionville, Conn. Bids Feb. 19. CD 1/21.

Dwight Bldg. Co., 109 Sanford St., Hamden, Conn., LB $713,000, (4 bidders) 1 story, 100 x 164 ft. masonry ang glass, Forestry LABORATORY, NEW HAVEN, CONN. Yale University School of Forestry, 360 Prospect St., New Haven, Conn. Bids Feb. 14. CD 1/30.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., White Plains** — SCHOOL — BA 4/7 — Bd. Educ., 279 Hamilton Ave., Senior High School. $7,500,000. Perkins & Will, 55 Church St., White Plains, archts. Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, Zone 17, engrs. Jaros, Baum & Bolles, 415 Lexington Ave., New York, Zone 17, mechanical engrs. CD 2/20.

HEAVY CONSTRUCTION—LB & CA

Atlantic Gulf & Pacific Co., 15 Park Row, New York, N. Y., LB $930,000, Contr. B.P. 58-58 for beach protection artificial beach nourishment at Far Rockaway, The Rockaways, City of New York, Queens Co., NEW YORK. Henry A. Cohen, dir. Bureau Contracts, Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Jan. 30. CD 1/27.

Henry A. Cohen, dir. Bureau Contracts, The Gov. Alfred E. Smith State Office Bldg., Albany, cancelled bids to have been opened Jan. 30, soil explorations and foundation investigations at various sites Interstate Rte. 505, interchange area at County Highway 34 to intersection with Rte. 12 about 4 mi. southwest of Alexandria Bay Village, Section 7E Omar Village, Proj. I-1118 (3), Jefferson Co., NEW YORK. CD 1/16.

▲ **NEW YORK**—State P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany,

N. Y.—**Hendrickson Bros., Inc.**, 63 No. Central Ave., Valley Stream, N. Y. CA $5,987,100, elimination of 7 Long Island R.R. grade crossings in Village of Freeport at Bay View Ave., Long Beach Ave., Bergen Pl., Ocean Ave., Grove St., Main St. and Henry St. incl. 2.82 mi., Nassau Co.;

N. Y.—**Horn Constr. Co., Inc.**, 2174 Hewlet Ave., Merrick, N. Y. CA $6,206,600, elimination of 9 railroad grade crossings on Atlantic Branch of Long Island R.R. between Jamaica and Laurelton, railroad will be carried over Brinkerhoff Ave., 11th Ave., 114th Ave., New York Blvd., Foch Blvd., Baisle Blvd., Farmers Blvd., 140th Ave. and Springfield Ave., 3.86 mi., incl. pedestrian underpasses at 108 and 109 Avenues, Queens Co. Bids Jan. 30. CD 2/5, under LB.

▲ **NEW YORK**—State P. Wks. Dpt., The Gov. Alfred E. Smith State Office Bldg., Albany, Bids opened 2/20,

N. Y.—**Zara Contg. Co., Inc.**, Hicksville, N. Y. LB $2,236,736 (3 bidders), wid'n., Imprv. 7.14 mi. section Ocean Parkway beginning at Plaza just west of pavilion at Gilgo State Park and extending eastward to traffic circle at Captree State Park, existing two-lane hy. will be widened to four-lanes separated by veriable width center mall, incl. also pedestrian underpass at Cedar Beach and improved facilities for access to beach areas along route, Suffolk Co.;

N. Y.—**John Arborio, Inc.**, W. Cedar, Poughkeepsie, N. Y. LB $254,552 (5 bidders), reconstr. 0.82 mi. section Barryville-Eldred Rd. (County Rd. 111, starting at Rte. 97 intersection near Barryville and extending generally northward incl. new bridge over Halfway Brook on norta end of project, Sullivan Co. CD 1/23.

Midboro Contr. Corp. and Lynboro Constr. Corp., 1163 61 Sts., Brooklyn 19, N. Y. LB $507,216 (10 bidders), (1) storm sewers and grading in Flatlands 1st St., Flatlands 2nd St., Flatlands 3rd St., Flatlands 4th St., Flatlands 5th St., Flatlands 6th St., Flatlands 7th St., Flatlands 8th St., Flatlands 9th St. and Flatlands 10th St. in each case from E. 105 to 108 Sts. and E. 08 St. from Seaview Ave. to Flatlands 1st St.; LB $155,484 (12 bidders), (2) storm and sanitary sewers and grading in E. 100th St. from sewer summits about 270 ft. south of Ave. M. to Seaview Ave.; E. 101 St. from ends of existing sewers about 180 ft. north of Ave. N. to Seaview Ave. 1 102nd St. and E. 103 St. in each case from Ave. N. to Seaview Ave., BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Zone 1, N. Y. Bids Feb. 20. CD 2/12.

NEW JERSEY—Comr. State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 2/18,

Ole Hansen & Sons, Franklin Ave., Pleasantville, N. J., LB $638,527 (7 bidders) grading, paving 2.166 mi. Rte. S-40 (1927), Section 5D, Rte. 72 (1943), from Hilliard to Ship Bottom, Stafford Twp., Fed. Proj. No. F-130 (8), Ocean Co. CD 1/31.

Earl Williams, Jr., Troy Hills Rd., Whippany, N. J., LB $116,353, est. $100,000, installing 16 in. water main and booster station to serve Birch Hill section, Whippany, MORRISTOWN, N. J. Town, Town Hall, Morristown, N. J. CD 8/20.

▲ **Ernest Renda Contract Co.**, Mountain Parkway, Green Brook, N. J., LB $808,431, trunk line sewer, SOMERVILLE, N. J., Somerset-Raritan Sewer Auth., 41 No. Bridge St., Somerville, N. J. Bids 2/21. CD 1/21;

McElwee-Courbis Constr. Co., 6209 Crescent Blvd., Pennsauken, N. J., LB $474,700, general contract treatment plant (Somerville, N. J.).

Turbine Equipment Co., 1063 Hy. 22, Mountainside, N. J., LB $142,800, olumbing (Somerville, N. J.).

▲ **U. S. Steel Co.**, American Bridge Div., Suburban Station Bldg., Phila., Pa. LB $9,246,285 railroad bridge over Delaware River between Phila., Pa. and Delair, N. J., PENNSYLVANIA and NEW JERSEY. Pennsylvania R.R. Co., Penn Center Plaza, Phila., Pa. J. F. Piper, asst. chief engr. of Constr. for owner. Bids Feb. 5. CD 12/13.

O'Hara Twp., Pittsburgh, Zone 15, Pa., rejected bids Jan. 30, sanitary sewers, O'HARA TWP., PA. $400,000. Will re-advertise. CD 1/13.

▲† **Blackwell Engineering Co.**, Box 358, Merrifield, Va. CA $1,250,000, constr. subway between Senate Office Bldg. and U. S. Capitol Bldg., WASH., D. C. Office of the Architect, U. S. Capitol, Wash., D. C. Bids Jan. 29, awarded Feb. 21. CD 2/3/58, under LB.

General Electric Co., River Rd., Schenectady, N. Y. CA $764,957, design, manufacture and furnish three 130 MVA two-winding transformers and assoc. equip. for Reynolds Sub-Station, St. Lawrence Power Proj., Contr. TP- 13, NEW YORK. The Power Auth. of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Jan. 30. CD 2/3, under LB.

BUILDINGS—LB & CA

Mars Assocs., Inc. & Normel Constr. Corp., 271 Church St., New York 7, N. Y., LB $578,000 (14 bidders), rehabilitation of New York City Community College of Applied Arts & Sciences, 300 and 302 Pearl St., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Feb. 19. CD 1/31.

▲ **Len Operating Co.**, 16 Court St., Brooklyn 2, N. Y., Owner Builds, $2,500,000, 6 story, 254 family APARTMENT and 137-car GARAGE, 9201-27 Shore Rd., BROOKLYN, N. Y. Morris Rothstein & Son, 186 Joralemon St., Brooklyn, Zone 2, N. Y., archts. CD 1/8.

▲ **Depot Constr. Corp.**, 42-15 Crescent St., Long Island City, N. Y., LB $6,359,000 (8 bidders) general contract CONTINUED TREATMENT and DISTURBED PATIENTS BLDG. (Bldg. 105), Manhattan State Hospital, Wards Island, NEW YORK N. Y. Dpt. P. Wks., Gov.

(Continued on page 117)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

New...Low Cost...Portable Ellicott Dragon*

easy to move from job to job...by truck or rail ...matched-marked parts for rapid field assembly

The new Ellicott 8" Dragon Model Dredge is a compact, high performance dredging unit. Like all "DRAGONS," this unit can be used for a variety of jobs . . . puts the outstanding economy of hydraulic dredging at your disposal for projects like road building, plant pond clearance and mosquito control. Or, for profitable development of new real estate from low-cost marginal land.

- **One Power Source** – 6 cyl. diesel engine with 142 shaft h.p. continuous rating powers Ellicott 8-inch heavy duty centrifugal suction pump, supplies power for hydraulically-actuated cutter and winch motors.
- **Rated Output** 85 cu. yds. per hour over 1,000 ft. pipeline.
- **Cutterhead and Ladder** dips as low as 17 feet below surface for fast, efficient digging of soft materials like sand, mud or silt.
- **2-Piece Hull** easy to transport and reassemble.
- **Heavy-Duty 8" Centrifugal Suction Pump** is simple, efficient, trouble-free.
- **Steel Spuds** "walk" the dredge through canals or waterways as work advances.

Learn how the new Ellicott 8" DRAGON can help you do more jobs better . . . at greater profit. Write for full information, today.

*T.M. REG. U.S. PAT. OFFICE MARQUE DÉPOSÉE

ELLICOTT MACHINE CORPORATION

1603 Bush Street, Baltimore 30, Maryland, U.S.A.

Subsidiaries: Dragues Ellicott France, Paris, France; Ellicott de Mexico, Mexico City, Mex.; Ellicott Fabricators, Inc., Baltimore, Md.; McConway & Torley Corp., Pittsburgh, Pa.; Baltimore Foundry & Machine Corp., Baltimore, Md.

Successors to the floating dredge business of the Bucyrus-Erie Co. and the American Steel Dredge Co. Complete engineering sales and repair parts service.

4440

Make a fast break . . .

with a Le Roi Model 52

There's a real pile-driver punch on the business end of Le Roi's 52 breaker: it'll smash through the toughest concrete in jig-time and come up looking for more.

Built like a bridge-girder on the outside, but slick as a watch on the inside, the Le Roi 52 gives you both long, rugged life *and* precise, economical operation. Spring-loaded handgrip throttle gives easy, positive control, and well-balanced "heft" makes the 52 easy on operators. See the powerful 52 at your Le Roi distributor's — or write Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.

AT-716

LE ROI
NEWMATIC
AIR TOOLS

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

(Continued from page 114)

Alfred E. Smith Office Bldg., Albany, N. Y. Bids Feb. 20. CD 2/19.

AFGO Eng. Corp., 475 Adelphi St., Brooklyn 17, N. Y., LB $469,000 (6 bidders) heating, Bldg. 105 (New York, N. Y.);

Cartmel-Morris, Inc., 36052 37 St., Long Island City, N. Y., LB $546,480 (7 bidders), plumbing Bldg. 105 (New York, N. Y.);

Forest Elec. Corp., 630 Ninth Ave., New York 19, N. Y., LB $692,977 (14 bidders), electric, Bldg. 105 (New York, N. Y.).

▲ **Diesel Constr. Co., Inc.**, 24 W. 58 St., New York, N. Y., CA est. $10,000,000, general contract 17 story, 250,000 sq. ft. OFFICE, Maiden Lane, Pearl, Water and Fletcher Sts., NEW YORK, N. Y. National Properties and Collins Tuttle Properties, Inc., 261 Madison Ave., New York, N. Y. Sylvan and Robert Bien, 33 W. 46 St., New York, N. Y., archts. Sears & Kopf, 13 E. 37 St., New York, N. Y., engrs.

▲ **Uris Brothers**, 300 Park Ave., New York, N. Y., Own Forces, $10,000,000, 30 story, 26,000 sq. ft. OFFICE, Park Ave. between 51 and 52 Sts., NEW YORK, N. Y. Emery Roth & Sons, 40 Park Ave., New York, N. Y., archts.

▲ **LeChase Constr. Co.**, 20 Saratoga Ave., Rochester, N. Y., LB $1,320,343, general contract CITY HALL RAMP GARAGE, ROCHESTER, N. Y. City, City Hall, Rochester, N. Y. Bids Feb. 4.

▲ **Delphi Constr. Co.**, 500 Zerega Ave., New York 16, N. Y., LB $1,947,900 (9 bidders), Contr. 894, general construction PSYCHIATRIC BLDG., Grasslands Hospital, VALHALLA, N. Y. Dpt. P. Wks., Westchester Co., County Office Bldg., White Plains, N. Y. Bids Feb. 19. CD 2/12;

Michael Harmonay Corp., 567 Yonkers Ave., Yonkers, N. Y., LB $352,140 (2 bidders), heating and ventilating Grasslands Hospital (Valhalla, N. Y.).

† **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y., rejected bids Jan. 30, 52 units of Capehart permanent family HOUSING at Morristown and Plainfield, NEW JERSEY, LB $580,000 and LB $363,000 respectively. CD 2/3, under LB.

Randall Constr. Co., 82 Prospect St., Passaic, N. J., CA $425,000, est. $400,000-$425,000, CENTER BLDG., FAIR LAWN, N. J. Fairlawn Jewish Center, 10-10 Norma Ave., Fairlawn, N. J. CD 1/22.

Simons & Greer, Inc., Hatboro, Pa. LB $696,000, general contract Regional HIGH SCHOOL, Deep Wells, FRENCHTOWN, N. J. Delaware Valley Regional High School Dist., Alexandria, N. J. CD 7/10.

▲ **Briarcliffe-Blue Ribbon Builders**, Abe Weitzman, (owner), Rte. 69, Pennington, N. J., Separate Contracts. $1,000,000. 48 unit RESIDENTIAL DEVELOPMENT, Rte. 69, HOPEWELL, N. J. Harry Maslow, 48 Westfield Ave., Elizabeth, N. J., archt.

▲ **Elliott B. Badoanes & Leo Goldstein**, 350 Irvington Ave., Elizabeth, N. J., Own Forces, $3,000,000, 190 HOUSES, Pool Ave. off Rt. 35 between Laurel Ave. and Middle Rd., Raritan Twp., known as Hidden Hills East and West, KEYPORT, N. J.

Blue Hill Estates, c/o Pasford Ltd., archts., 37-01 Broadway, Fairlawn, N. J., Owner Builds, $400,000, 20 HOMES, Grand Ave. MONTVALE, N. J.

▲ **Walter C. Hurley**, 1928 Heck Ave., Neptune, N. J., LB $1,374,283, (9 bidders), general contract HIGH SCHOOL for Springdale and Corlies Aves., NEPTUNE, N. J. Bd. Educ. Twp. of Neptune, Neptune, N. J. CD 1/16.

Joseph L. Muscarelle, Industrial Ave., Teterboro, N. J., CA $495,535, Parkway ELEMENTARY SCHOOL, PARAMUS, N. J. Bd. Educ., Boro of Paramus, Paramus, N. J., Lawrence Licht, 19 Knickerbocker Rd., Englewood, N. J., archt. CD 2/11, under LB.

▲ **Matthew Leivo & Sons, Inc., L&T B I Bldg., New** Castle, Pa. CA $1,217,000 general constr. JUNIOR-SENIOR HIGH SCHOOL for Northeastern Beaver County Jt. School Bd., North Sewickley Twp., BEAVER FALLS, PA. Pa. P. Schools Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids Jan. 16. CD 1/21, under LB.

H. B. Alexander & Son, 315 Vaughn St., Harrisburg, Pa. CA $500,000. CHURCH at Green and Division Sts. HARRISBURG, PA. Bethlehem Lutheran Church, Green and Cumberland Sts., Harrisburg, Pa.

▲ **Garden Apts**, c/o William G. Chirgotis, archt., 968 Stuyvesant Ave., Union, N. J., Separate Contracts. $3,000,000 APARTMENT (202 units), Ferry Rd. etc., MORRISVILLE, PA.

▲ **Blake Constr. Co., Inc.**, 33 E. St. S. W., Wash., D. C., Owner Builds, $6,500,000, 12 story OFFICE BLDG., 1120 Connecticut Ave., N. W., WASH., D. C. Berla & Abel, 2000 P. St. N. W., Wash., D. C., archts.

▲ **Charles E. Smith**, 1425 H St. N.W., Wash., D. C., CA Est. $2,500,000, 8 story, 228-unit APARTMENT, 4501 Connecticut Ave. N.W., WASH., D. C. Albermarle Towers, Inc., 1425 H. St. N.W., Wash., D. C. Corning and Moore, 1302-18th St. N.W., Wash., D. C., archts.

SOUTH

BUILDINGS—BA

▲ **Ky., Erlanger**—SEMINARY—BA 3/18—St. Pius Seminary, Diocese of Covington, Madison Ave., Covington, seminary. $1,400,000. Plans deposit $50. CD 12/7/56.

HEAVY CONSTRUCTION—LB & CA

VIRGINIA—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1220 E. Broad St., Richmond, Bids opened 2/19,

McLean Contg. Co., 1301 Fidelity Bldg., Baltimore, Md. LB $815,532 (9 bidders) N. & W. Underpass and approaches Rte. 58, State Proj. 0058-122-071, Fed. Proj. UG 121-1 (1) City of Norfolk. CD 1/15.

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond, Bids opened 2/19,

Va.—**Wilmoth Paving Co.**, 1st and P Sts. SE, Wash., D. C. LB $926,300 (4 bidders) b. conc. 5.14 mi. Rte. 236, beginning at .23 mi. W. Int. Rte. 244 (Annandale) and ending at Int. Rte. 237 (Fairfax) State Proj. 236-029-007-008 Fed. Proj. F-014-1 (4) Fairfax Co.;

Va.—**Webster E. Booze**, Buchanan, Va. LB $126,221 (3 bidders) var. soil aggreg. bit, surf. tr. 2.96 mi. Rte. 640, beginning at 0.3 mi. W. of N. Int. Rte. 606, and ending at .16 mi. E. of N. Int. Rte. 641 (S. of Lithia) State Proj. 0640-011-011-015-016 Fed. Proj. S-SG-977 (1) Botetourt Co.;

Va.—**S. Vance Wilkins, Contractor**, Amherst, Va. LB $76,600 (8 bidders) soil aggreg. base and bridge 0.68 mi. Rte. 631 beginning at .53 mi. E. Int. Rte. 11 (N. of Lexington) and ending at 1.23 mi. E. Int. Rte. 11, State Proj. 0631-081-024-025 and Fed. Proj. S-187 (2) Rockbridge Co.;

Va.—**McAmiss Co.**, Tazewell, Va. LB $164,101 (8 bidders) soil base, pen. top and bridge 1.93 mi. Rte. 615 beginning at W. Int. Rte. 616 (north of Carbo) ending at Int. Rte. 600 (near S. Clinchfield) State Proj. 0615-083-023 Fed. Proj. S-1306 (4) Russell Co.;

Va.—**G. C. Dawson, Contractor**, White Stone, Va. LB $93,839 (10 bidders) soil aggreg. (alt. soil-cement) 0.86 mi. Rte. 49 beginning at Int. Rte. 460 W. of Crewe and ending at Int. Rte. 360 State Proj. 0049-067-004, Nottoway Co.;

Va.—**J. Lawson Jones Constr. Co.**, Box 696, Clarksville, Va. LB $439,175 (7 bidders) c. conc. and 2 bridges 0.32 mi. Rte. 29A beginning at 0.25 mi. S. Int. Rte. 460 (Cambpell Ave.) and ending at 0.62 mi. S. Int. Rte. 460 (Campbell Ave.) State Proj. 7092-118-085-076-077-078 Fed. Proj. U-UG-118-1 (3), City of Lynchburg;

Va.—**Blythe Bros. Co., Inc.**, 2911 Hutchinson Ave., Charlotte, N. C. LB $2,386,151 (7 bidders) b. conc. and 4 bridges 5.39 mi. Rte 95 (401) beginning at 0.73 mi. S. Int. Rte 35 and ending at 0.5 mi. S. Int. Rte 626 State Proj. 0095-074-001-003-005-00-011 Fed. Proj. I-201-1 (3) (11R/W) Prince George Co.;

Va.—**Wright Contg. Co., Inc.**, Box 1537, Columbus, Ga. LB $4,014,653 (11 bidders) b. conc. 5.69 mi. and b. conc. 0.98 mi. and 9 bridges Rte 81; 33 (402) beginning at 2.05 mi. S. Prop. Rte 33-3.60 mi. Prop. Rte 33 and ECL Harrisonburg, Fed. Proj. I-202-3 (2) Rockingham Co.;

Va.—**Burkholder & Burkholder**, 1025 Connecticut Ave., N. W., Wash., D. C. LB $516,727 (12 bidders) grading, draining 2.27 mi. Rte 413 beginning at Rte 617 (Back Lick Rd.) and ending at 0.12 mi. N. Rte 620 (Braddock Rd.) State Proj. 0413-029-006, Fed. Proj. I-213-1 (5) Fairfax Co.;

Va.—**Barnhill & Long, Inc.**, Box 725, Tarboro, N. C. LB $1,636,643 (7 bidders) grading, draining, bridge and approaches 2.41 mi. Rte 413, beginnnig at 0.15 mi. N. Rte 620 (Braddock Rd.) and ending 0.85 mi. N. Rte 236 (Lee Jackson Hy.) State Proj. 0413-029-006-G-4, Fed. Proj. I-213-1 (5) Fairfax Co. CD 1/15.

▲ **GEORGIA**—State Hy. Dpt., General Office No. 2, Capitol Sq., Atlanta,

Ga.—**Wright Constr. Co.**, Box 1580, Columbus, Ga., CA $979,242, Contr. FAP F-074-1 (7), widen, reconstr. resurf. widen 1 bridge 13.163 mi. on what is locally known as Columbus Warm Springs Rd., State Route 85 and 85-W beginning approx. 4.2 mi. south of south city limits of Waverly Hall and ext. north to point on State Rte. 85. west, approx. 0.6 mi. north of junction of State Rte. 85 and 85 West, Harris and Talbot Counties.

Ga.—**E. A. Hudson's Sons**, Bolton, Ga., CA $892,562, grading, paving, 3 bridges 8.049 mi. on what is locally known as Cleveland-Blairsville Rd. State Route 11, beginning at intersection with State Route 75 in Cleveland and ext. NW to Lampkin Co. line, FAP F-002-7 (3) White Co., Bids Dec. 13, CD 12/19, under LB.

▲ **FLORIDA**—State Road Dpt., Dist. Office, Lake City, Bids been opened 2/18,

Fla.—**Brinson-Allen Constr. Co.**, Box 1455, Tampa, Fla., LB $105,858, est. $120,000 (7 bidders) Proj. Job No. 0359-153, SR S-846, grading 6½ in. limerock base, primed, Type 2 surf. treat., 6.918 mi. from SR 45 south of Bonita Springs, east approx. 6.918 mi. Collier Co.; LB $172,614, est. $160,000 (12 bidders) State Proj. No. 7005-112, SR 500, 8½ in. limerock base, primed, Type 1 b. conc. surf. course with binder, 3.806 mi. from SR 511 east to Melbourne, Brevard Co.;

Fla.—**Ewell Eng. & Contr. Co.**, Box 791, Lakeland, Fla., LB $104,359, est. $90,000 (12 bidders) Proj. No. 1654-153-SR-S-547, 6½ in. limerock base, primed, Type 1-A surf. and Type 11 b. conc. surf. course, drainage structures, from SR 500 in Davenport West approx. 1.732 mi., Polk Co.; LB $101,922 (11 bidders) Proj. No. 1668-150 SR S 540, light grading, 6½ in. limerock base, primed, Type 11 b. conc. surf. course, 2.681 mi. from SR 700 at Highland City west, Polk Co.; LB $206,115, est. $200,000 (10 bidders) Proj. Job No. 1670-150 SR S 037-A, S-37 B and S-540 A, 6½ in. limerock base, primed, Type 2 b. conc. surf. course 5.077 mi. from Lakeland southeast and south via Scott Lake, Polk Co.;

Fla.—**White Constr. Co.**, Box 73, Chiefland, Fla., LB $219,042, est. $160,000 (7 bidders) Proj. No. 3461-150, SR 40, 6 in. limerock stabilized base, primed, Type 2 surf. treating, 0.921 mi., constr. 280 ft. concrete slab deck bridge on composite concrete and steel pile bents, Levy Co.; LB $839,190, est. $850,000 (7 bidders) heavy constr. limerock base, Type 1

Recent McGRAW-HILL BOOKS for engineers

ENGINEERING MATERIALS HANDBOOK

Just Published! Gives answers by a number of specialists to both routine and specialized questions regarding the choice of engineering materials. Considers materials from the viewpoint of engineering structures, machinery, and equipment, and includes technical tables, design information, etc. **Edited by Charles L. Mantell, Consult. Engr.; Newark College of Engrg. 1906 pp., 648 illus., $21.50**

ELECTRICAL SYSTEMS DESIGN

Brings you a complete picture of all that is best in modern practice in the design and layout of electrical systems for power, light, heat, signal systems, and communications. Shows how to select apparatus of the right type, size, appearance, or rating; how to work with the architect; how to design lighting systems scientifically, etc. **By J. F. McPartland and Editors of Elect. Const. and Maint. 140 pp., illus., $6.00**

MATHEMATICS FOR SCIENCE AND ENGINEERING

A reference book planned especially to help engineers and technicians find, understand, and apply the mathematical procedures best adapted to solve a particular problem simply and quickly. Covers mathematics all the way from arithmetic to such things as complex numbers, infinite series and methods of approximation. **By Philip L. Alger, Cons. Eng., GE. 360 pp., 117 figures, $6.95**

MANAGEMENT FOR ENGINEERS

Just Published! Provides the engineer with the know-how for undertaking management relations and responsibilities. Chapters discuss production costs and their control, the basic financial transactions of a business enterprise, the concepts of authority and responsibility, and the higher level decision-making process. **By Roger C. Heimer, Villanova Univ., 453 pp., $6.75**

— — MAIL THIS COUPON — — —

McGRAW-HILL BOOK CO., INC., Dept. NR 3-6
327 W. 41st St., N.Y.C. 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

☐ Mantell—**Engrg. Mat'ls Hdbk.**, $21.50
☐ McPartland—**Elect. Systems Des.**, $6.00
☐ Alger—**Math. for Science & Engrg.**, $6.95
☐ Heimer—**Mgt. for Engineers**, $6.75

(PRINT)
Name .....
Address .....
City ..... Zone.... State.....
Company .....
Position .....

For price and terms outside U. S. write McGraw-Hill Int'l., N.Y.C. NR 3-6

This combination gives the

LOWEST COST PER HOLE in DRILLING ANY MASONRY MATERIAL!

1 the **BIT**

NEW ENGLAND Cyclo-Core®

MULTI CARBIDE TIPPED ROTARY **BIT**

***FASTEST* in Concrete or Any Masonry Material**

- Up to 3 times faster than other core drills
- Multi-Spiral Flutes assure positive dust removal
- All cutting edges ground
- Easier to re-sharpen . . . "Do It Yourself"
- More drilling footage

SIZES: ¾" to 6" diameter . . .

Exclusive "Starting Centers" permit pin-point positioning of bit . . . prevent "walking" when starting holes.

2 the **RIG**

NEW! Cyclo-Core® PORTABLE MASONRY DRILLING MACHINE

for use with Cyclo-core Carbide-Tipped Bits

NO WATER REQUIRED

MODEL 6

PAT. PEND.

- Lowest possible cost per hole using CYCLO-CORE Bits.
- Minimum set-up and knock-down time.
- Drills holes up to 6" diameter in concrete with or without rods.
- Puts sufficient pressure on cutting edges of bit.
- Manually or hydraulically operated by one man.
- Permits drilling close to walls, or in corners.
- Completely portable—easily wheeled by one man. For extreme portability unit can be completely disassembled.

WRITE FOR DETAILS AND FREE "WHAT and HOW" DRILLING MANUAL

NEW ENGLAND CARBIDE

Designed, Engineered, and Proven for the Job.
Cyclo-Core Bits available in sizes —¼" to 6" diameter

New England **Carbide Tool Co., Inc.**
55H Commercial St., Medford 55, Mass.

b. conc. surf. course with binder course, 1 concrete box culvert bridge, length, 10.21 mi. between SR 10 in Lake City and the Suwannee-Hamilton Co. line, Proj. F-002-3(12) and U-002-3(13), Job Nos. 2904-207 and 2904-206, SR Nos. 25 and 100 (US 41), Columbia Co.;

Fla.—**Jas. H. Craggs Constr. Co.**, Box 22, Gainesville, Fla., LB **$77,344**, est. $60,000 (10 bidders) Proj. Job No. 1602-115, storm sewers, etc., 2,311 lin. ft., in Haines City on 5th St. from Hinson Ave. (SR 600) to south of Lake Eva, Polk Co.; LB **$85,052**, est. $80,000 (7 bidders) Proj. No. S-439 (1) Job No. 7055-250, 6 in. sand. bit. road mix with mineral seal coat 3.027 mi. between SR 520 west of Cocoa and SR 5-(US-1) FAP. No. S409 (1), Brevard Co.;

Fla.—**Troup Bros., Inc.**, Box 168, Miami 33, Fla., LB **$375,607**, est. $300,000 (11 bidders) Proj. No. 8807-102 (SR A-1-A) from SR 502 in Vero Beach northwest approx. 8.89 mi. to point approx. 1 mi. north of SR 510, 8½ in. limerock base, primed, Type 2 surf. treat., Indian River Co.; LB **$216,369**, est. $225,000 (10 bidders) limerock base, primed, Type 1 b. conc. surface course with binder 1.306 mi. from Dam Callie Causeway to Canova Beach, Proj. 7012-150, SR 518, Brevard Co.;

Fla.—**Geo. G. Tapper Co., Inc.**, Port St. Joe, Fla., LB **$78,238**, est. $65,000 (5 bidders) Proj. No. 4953-154, SR S-65, from point approx. 1 mi. north of SR 30, north along East Bay 1.048 mi., Job No. 4959-150, SR S-379, from point on SR 30 south of Carrabelle River Bridge northwesterly approx. 1.19 mi., stabilized base, primed, Type 2 surf. treatment, 2.238 mi., Franklin Co.;

Fla.—**Coggin & Deermont**, Chipley, Fla., LB **$125,831** est. $120,000 (9 bidders) Proj. FAP Job No. 5066-150 SR S-159-A, grading from point on SR 63 north of Havana west to SR 159, 6½ in. sand-clay base, primed Type 2 surf. constr. 135 ft. railroad overpass of concrete deck and prestressed concrete beams on concrete pile bents, 1.505 mi. Job No. 5066-151, SR-S 12-B-from SR 63 north of Havana east to SR 12, total length 1.840 mi. Gadsden Co.;

Fla.—**Langston Constr. Co.**, Box 3031, Orlando, Fla., LB **$173,739** est. $110,000, (4 bidders) Proj. No. 7568-150 8½ in. limerock base, primed type 1; b. conc. surf. course with binder 0.486 mi. Bumby St. in Orlando from Roberinson Ave. to Colonial Dr., State Proj., Orange Co.;

Fla.—**Pav-A-Way Corp.**, Box 341, Lakeland, Fla., LB **$73,275**, est. $90,000 (6 bidders) Type 11 b. conc. surf. 12.782 mi. from SR 16 (US 441) at Holopaw east to point on Old SR 500 near Deer Park, Job. No. 9203-801, SR 500 (US 192) Osceola, Co.;

Fla.—**W. L. Cobbs Constr. Co.**, Box 977, Tampa, Fla., LB **$1,068,507** est. $1,250,000, (12 bidders) limerock base, Type 1 b. conc. surf. course and binder course, 4.069 mi. between Dunlawton Blvd. at Port Orange and the South City limits of Daytona Beach, F. A. Proj. No. S½ 482 (1) Job. No. 7953-250 SR A-1-A, Volusia Co.;

Fla.—**J. D. Manly Constr. Co.**, Box 586, Leesburg, Fla., LB **$80,985**, est $100,000, (5 bidders) 8½ in. limerock base, primer, Type 2, surf. 2.012 mi. from SR 44 west of Leesburg North and East to SR 25 (US 441) north of Leesburg, Proj. No. 1164-150 SR S-44-A, Lake Co.;

Fla.—**Ballinger Paving Co.**, Greenville, S. C., LB **$2,688,258** est. $3,000,000, (11 bidders) 8.513 mi. from point approx. 8 mi. east of Tampa and point in Plant City, 9 in. c. concc. pavement plain, 6½ in. limerock base with Type 1-A bit surf. surf. course and binder, constr. 5 concrete box culverts of bridge length; 2 single concrete deck interchange bridges on concrete piling, over Antiock McIntosh Rd. branch-Forbes Rd. and Thonotossa Rd. removal of existing bldgs., fencing, FAP interstate Proj. No. (1-104-1(7) Job No. (1019-402) SR 400, Hillsborough Co.;

Fla.—**Dunn Constr. Co.**, 2508-3rd Ave. North, Birmingham, Ala., LB **$782,841** est. $800,000, (7 bidders) limerock base, Type 1 b. conc. surf. course and binder course, 4 concrete box culverts of bridge length 4.458 mi. between Alafia River north of Gibsonton and SR 676 Proj. No. F0011-2 (41) Job No. 1006-208 SR (US 41), Hillsborough Co.;

Fla.—**J. W. Conner & Sons, Inc.**, Box 2522, Tampa, Fla., LB **$264,579** est. $300,000 (6 bidders) limerock base, Type 11 b. conc. surf. course, 1 concrete box culvert of bridge length, concrete deck bridge on concrete piles 4.767 mi. between SR 589 and SR 597 south of Tarpon Junction, FA Proj. S-466(1) Job No. 1077-250, SR S-584, Hillsborough Co.;

Fla.— **R. H. Wright & Son, Inc.**, Box 781, Fort Lauderdale, Fla., LB **$1,330,808**, est. $950,000 (8 bidders) Project Job No. Fed Aid S-0482 (1) Job No. 7953-250-SR A-1-A, between Dunlawtan Blvd. at Port Orange and south city limits of Daytona Beach, 8½ in. limerock base, Type 1 b. conc. surf. course and binder course; 4.069 mi. Volusia Co. CD 1/23 and 2/6.

BUILDINGS—LB & CA

▲ **Baker & Combs Constr. Co.**, 601 E. Brockway Ave., Morgantown, W. Va., CA **$1,017,000**, MEN'S DORMITORY, MORGANTOWN, W. VA. W. Va. University, Bd. Governors, Morgantown, W. Va. Bids Feb. 4, awarded Feb. 20. CD 2/10, under LB.

R. H. Pinnix, Box 97, Gastonia, Ga., CA **$863,447**, Alexander Graham JUNIOR HIGH SCHOOL and Runny-Mede Lane ELEMENTARY SCHOOL, CHARLOTTE, N. C. City Bd. Educ., City Hall, Charlotte, N. C. Bids Jan. 30. CD 2/20, under LB.

Fred C. Gardner Co. Inc., 1316 W. Washington Ave., Kinston, N. C., CA **$657,253**, 100 DWELLINGS and MAINTENANCE SHOP, HOUSING PROJ. NC 4-5, KINSTON, N. C. Housing Auth. City of Kinston, City Hall, Kinston, N. C. Bids Jan. 29, CD 2/6, under LB.

▲ **J. M. Thompson**, 655 W. Lenoir St., Raleigh, N. C., CA **$1,983,212**, general contract, 300-unit WALNUT TERRACE HOUSING PROGRAM, RALEIGH, N. C. City of Raleigh Housing Auth., Halifax Court, Raleigh, N. C. Bids Jan. 14. CD 1/20, under LB.

Braun Constr. Co., 2605 Whitaker St., Savannah, Ga., CA **$431,087**, 2 groups APARTMENT BLDGS., 1 for residents, other for interns, SAVANNAH, GA. Chatham Co. Hospital Auth., Memorial Hospital, Savannah, Ga. Bids Feb. 4, CD 1/30.

Caldwell-Scott Engr. & Constr. Co., Inc., 340 SE 24th St., Fort Lauderdale, Fla., CA **$541,558**, Proj. F-101, POLICE, JAIL and COURT BLDG., FORT LAUDERDALE, FLA. City, Wm. J. Veeder, mgr., City Hall, Fort Lauderdale, Fla. Bids Feb. 7. CD 2/19, under LB.

C & B Constr. Co., 244 S. Parkway East, Memphis, Tenn., CA **$509,750** est. $575,000, general contract 1 story, 200 x 300 ft. brick, concrete. PLANT addn. 16 ft. high, for Musical Instruments, etc., CORINTH, MISS. City, Gerald Harrison, city clk., Corinth, Miss., The Wurlitzer Co., 105 West Adams St., Chicago, Ill., lessee. John L. Turner & Assocs., 1224 N. West St. and Box 1348, Jackson, Miss., archts. Bids Feb. 11.

▲ **George A. Caldwell Constr. Co.**, 622 Neosho Ave., Baton Rouge. La., CA **$2,430,294**, constr. 6 story steel, concrete Highway Department HEADQUARTERS ADMINISTRATION BLDG., S. P. No. 600-01-19, State Capitol, BATON ROUGE, LA. Louisiana State Hy. Dpt., R. B. Richardson, dir., Hy. Office Bldg., Baton Rouge, La. Bids Feb. 14. CD 2/19, under LB.

▲ **Brice Bldg. Co.**, Box 8186, New Orleans, La., CA **$1,503,406**, constr. large precast panels and structural tile James Derham JUNIOR HIGH SCHOOL, 2600 S. Rocheblave St., NEW ORLEANS, LA. Orleans Parish School Bd., 703 Carondelet St., New Orleans, La. Bids Feb. 13. CD 2/20, under LB.

MIDDLE WEST

BUILDINGS—BA

Ill., Chicago—RECTORY—BA 3/11—Catholic Bishop of Chicago, 719 N. Wabash Ave., 2 story rectory, 2 story school, 1 story, bsmnt. church, Polk St. and Blue Island Ave., Holy Guardian Angel Parish, $400,-000. Belli & Belli, 6040 W. Fullerton Ave., archts. CD 8/29.

BUILDINGS—SLC

▲ **Ill., Evanston** — APARTMENT — Hurwith, Bright & Zaltzman, c/o Thulin, Woods & Isenee, archts., 105 S. LaSalle St., Chicago, soon lets contract, 8 story, 106 units apartment bldg., 800 No. Hinman Ave. **$1,000,-000.** CD 4/11/56.

▲ **O., Cincinnati**—MEN'S DORMITORY—Potter, Tyler, Martin & Roth, archts., 128 E. 6th St., soon lets contract Men's Dormitory addn., for University of Cincinnati, Burnet Woods Park, Cincinnati. **$1,800,000.** Ziel-Blossom & Assocs., 206 East 6th St., engrs. CD 1/4/57.

HEAVY CONSTRUCTION—LB & CA

J. M. Corbett Co., 2500 S. Corbett Ave., Chicago, Ill. LB **$637,894.** widening, paving Marquette Rd. from Stony Island to California Ave., CHICAGO, ILL. Chicago Park District, 425 E. 14th Blvd., Chicago, Ill. CD 1/30.

▲ **Overland Constr. Co.**, 205 W. Wacker Dr., Chicago, Ill., LB **$3,789,534**, bridge, Harrison St. at Chicago River, CHICAGO, ILL. City, City Hall, Chicago, Ill. CD 2/4.

▲ **Paschen Contractor's, Inc.**, 2733 Elston Ave., Chicago, Ill., LB **$4,073,919**, bridge structure for NW Route Superhighway C.&N.W. R.R. grade separation, W. Kinzie to W. Hubbard, CHICAGO, ILL. City, City Hall, Chicago, Ill. CD 1/3.

Comstock Constr. Co., Traverse City, Mich. LB **$469,000,** est. $650,000. (16 bidders), sewage treatment plant addns., TRAVERSE CITY, MICH. City, F. A. McCall, city clk., Traverse City, Mich. C. L. Andrews, Traverse City, city engr. Bids Feb. 10. CD 1/16.

▲ **Mancini Constr. Co.**, 23170 Schoenher, East Detroit, Mich. CA **$1,594,576.** sewers, appurtenances, WARREN, MICH. City, Hidegarde M. Lowe, clk., 6850-9-Mile Rd., Warren, Mich. Bids Feb. 6. CD 1/10; **Greenfield Constr. Co.**, 15601 West 6-Mile Rd., Detroit, Mich. CA **$511,344.** pumping station and diversion chamber, etc. (Warren, Mich.)

BUILDINGS—LB & CA

▲ **Murphy Brs. Bldrs., Inc.**, 7945 Hamilton Mt. Healthy, O., CA **$1,250,000** 60 one story, partial bsmnt. brick HOMES, on ext. of Alex Dr., CINCINNATI, O. Chesley Dev. Co., 5945 Ridge Ave., Cincinnati, O. Awarded Feb. 21. CD 12/9.

▲ **Philip Stenger & Sons**, 5376 Philorett Dr., Cincinnati, O., Own Forces, **$1,200,000,** 60 one story, bsmnt. brick HOMES, on ext. of Floridale Crest, CINCINNATI, O. Charles Bonfield, 4953 Shirley, Cincinnati, O., engr.

Shaker-Ohio Co., c/o Herman Moster, 2531 N. Moreland Blvd., Cleveland 20, O. Own Forces. **$600,000.** 3 story APARTMENT, Shaker and East Blvds., CLEVELAND, O. Pasqual R. Laurie, 1310 Carnegie Ave., Cleveland 15, O., archt.

▲ **American Community Builders**, 18130 Fenkell, Detroit, Mich. Owner Builds, **$5,000,000,** 300 brick HOMES, Berwick Manor No. 2 Development, along Courtright Rd., COLUMBUS, O.

The John Jacobson Co., 1046 N. Main St., Akron, O., CA **$757,503,** (9 bidders) general contract new HIGH SCHOOL, KENT, O. Kent Bd. Educ., Kent, O. Fulton, DelaMotte & Assocs., 6014 Euclid Ave., Cleveland 3, O., archts. Bids Feb. 13, awarded Feb. 18. CD 2/10/58.

▲ **Paugh & Brown Constr. Co.,** 6007 Euclid Ave., Cleveland 13, O., CA Approx. **$2,000,000,** first unit of North Summit SHOPPING PLAZA, 30 brick, block stores, MACEDONIA, O. North Summit Shopping Plaza, Inc., Charles Paugh, pres., 6007 Euclid Ave., Cleveland 3, O. Arthur E. Rowe & Assocs., 3125 Euclid Ave., Cleveland 15, O., engrs. CD 2/5/57.

▲ **Joseph L. Hoislbauer,** 5351 Stadium Dr., North Olmsted, Ohio, Own Forces, **$5,500,000,** 214 HOMES, NORTH OLMSTED, O. Heine, Crider & Williamson, 105 Front St., Berea, O., and Pasquale Laurie, 1310 Carnegie Ave., Cleveland 15, O., archts. Awarded Jan. '58.

Zehman-Wolf & Sherman Constr. Co., 13484 Cedar Rd., Cleveland 18, O., CA Est. **$650,000,** 5 story, 22 suite APARTMENT, N. Moreland Blvd., SHAKER HEIGHTS, O. Moreland Park Apts., Inc., c/o Zehman-Wolf & Sherman, 13484 Cedar Rd., Cleveland 18, O. CD 1/29, under undisclosed owner.

▲ **Engstrom & Wynn,** 1117 Chapline, Wheeling, W. Va., LB **$1,200,000,** (5 bidders) general contract, 6 story St. John's HOSPITAL, STEUBENVILLE, O. Sisters of St. Francis, Sylvania, O.- Bids Feb. 18. CD 12/31.

▲ **Wood Constr. Co.,** 1133 Columbus St., Bellefontaine, O., CA **$1,025,800,** general contract County HOSPITAL, VAN WERT, O. Comrs. Van Wert Co., Court House, Van Wert, O. Bids Jan. 28. CD 2/18, under LB.

▲ **Zehman-Wolf & Sherman,** 13484 Cedar Rd., Cleveland 18, O., CA **$1,250,000,** 60,300 sq. ft. split-level DEPARTMENT STORE BLDG. (to be leased to Federal Dpt. Stores of Detroit, 1200 E. 6 mi. Rd. H.P., Detroit, Mich.,) WILLOWICK, O. Shoregate Stores Co., 17903 St. Clair Ave., Cleveland 10, O. Citizens Bldg., Cleveland 14, O. and Charles N. Agree, Inc., 1140 Bank Bldg., Detroit, Mich., archts. CD 5/4/57.

▲ **Superior Constr. Co.,** 1900 E. 7 Ave., Gary, Ind., CA **$1,250,000,** 1 and 2 story, brick DEPARTMENT STORE, sewers and bit. paving, 35th and Grant Sts., GARY, IND. L. I. Combs & Sons, 2645 Wabash St., Gary, Ind. Bids Jan. 15. CD 1/3.

William Gill, Danville, Ind., CA **$808,820,** general contract 2 story 80,000 sq. ft. U shaped, masonry concrete, steel frame HIGH SCHOOL, GREENCASTLE, IND., Greencastle School Corp., Bd. Trustees, Greencastle, Ind. Bids Jan. 29, CD 1/24.

† **F. A. Wilhelm Constr. Co., Inc.,** 3914 Prospect St., Indianapolis, Ind., LB **$496,056,** motor vehicle storage shed, parking area, etc., Army Reserve Training Center, INDIANAPOLIS, IND. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., Bids Feb. 13, CD 1/22.

B. W. Handler Constr. Co., 223 W. Jackson Blvd., Chicago, Ill., LB **$763,469,** OFFICE, HEADQUARTERS BLDG., SE cor. Erie & Rush Sts., CHICAGO, ILL. Kiwanis International, 520 N. Michigan Ave., Chicago, Ill. CD 1/24.

Harvey A. Hanson Bldrs., Inc., 1851 N. Elston Ave., Chicago, Ill., LB **$534,148,** 2 story, bsmnt., Luella GRADE SCHOOL addn., 9928 S. Crandon Ave., CHICAGO, ILL. Chicago Bd. Educ., 228 N. LaSalle St., Chicago, Ill. CD 2/11.

▲ **S. N. Nielsen Co.,** 3059 W. Augusta Blvd., Chicago, Ill., LB **$1,250,000,** 1 story, 118,000 sq. ft. PAPER STORAGE WAREHOUSE, 26th and Halsted and S. Branch Chicago River, CHICAGO, ILL. Time, Inc., 330 E. Cermak Rd., Chicago, Ill. Bids Feb. 5. CD 1/31.

▲ **Lamp Constr. Co.,** 112 Division St., Elgin, Ill., CA **$1,500,000,** PUBLISHING HOUSE and OFFICE BLDG., parking area, Dundee Ave. adj. to Trout Park, ELGIN, ILL. Brethren Publishing House, 24 S. State St., Elgin, Ill. Frazier & Raftery, 315 James, Geneva, Ill., archts., CD 1/21.

▲ **Bee Gee Builders,** 5936 W. Addison St., Chicago, Ill., Own Forces, **$1,170,000,** 78 HOMES, Western and Church Sts., NILES, ILL.

Ockerlund Constr. Co., 4911 N. Lincoln Ave., Chicago, Ill., CA **$616,847** (a) Mannheim SCHOOL addn., Melrose Park, (b) Scott SCHOOL addn., Melrose Park, (c) new Primary SCHOOL, Northland, (d) Westdale SCHOOL addn., Melrose Park, NORTHLAKE, ILL. School Dist. 83, 533 N. Roy St., Northlake, Ill. CD 2/18, under LB.

Detroit Edison Co., 2000 2nd Ave., Detroit 26, Mich. Owner Builds. **$400,000,** SHOP and WAREHOUSE alterations, 6200 Warren, DETROIT, MICH.

▲ **Richart Dreyer & Endress,** 950 Hilton Rd., Detroit, Mich., CA Est. **$1,500,000,** 2 story, 150,000 sq. ft. STORE, Trenton and Eureka Rds., ECORSE MICH. Montgomery Ward Co., 1540 Grand River, Detroit, Mich. Charles N. Agree, Inc., 14330 W. McNichols Rd., Detroit, Mich., archts. CD 1/7.

▲ **Barnes Constr. Co.,** 1316 Wallen St. S.W., Grand Rapids, Mich., CA **$1,772,500,** WAREHOUSE, ADMINISTRATION BLDG., 44th St. and Fuller St. S.W., GRAND RAPIDS, MICH. Spartan Stores, Inc., 150 Buchanan, Grand Rapids, Mich. Bids Feb. 7. CD 2/25, under LB.

▲ **Madison Constr. Corp.,** 600 Woodward Ave., Detroit, Mich. Owner Builds. **$1,900,000,** 129 brick HOUSES "Edhill Manor" Middlebelt and Judith, LIVONIA, MICH.

Sayburn Bldg. Co., 19114 W. McNichols Rd., Detroit, Mich. CA **$560,000,** 50 HOMES "Grandview Gardens" Middlebelt Rd., LIVONIA, MICH. LaRue Realty Co. (AGT) 16579 James Couzens, Detroit, Mich.

▲ **Miller-Davis Co.,** 1029 Portage St., Kalamazoo, Mich., CA Est. **$1,000,000,** design and construct Powder Metallurgy Fabricating PLANT, STURGIS, MICH., Bound Brook Oil-Less Bearing Co., Lincoln Blvd., Bound Brook, N. J. CD 8/10/56.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Mo., St. Louis**—SCHOOL—BA 3/11—Bd. Educ., George H. Fletcher, comr. School Bldgs., 911 Locust St., Zone 1, M-1-6, 2 story Vaughn Elementary School, O'Fallon and Hogan Sts. Over $1,000,000. Plans deposit $25. A. Albert, c/o owner, supervr.-archt. CD 12/5.

Mo., Rolla—STUDENT UNION—BA 3/18—Curators of University of Missouri, Parker Hall Auditorium, Rolla, Proj. Mo.-23-CH 30 2 story, brick, stone, etc. student union bldg. for Missouri School of Mines & Metallurgy. Over $425,000. Plans deposit $25. Curators of University of Missouri, Dale O. Bowling, bus. mgr., 116 Jesse Hall, Columbia, Mo. Kenneth E. Wischmeyer, 911 Locust St., St. Louis, Zone 1, archts. Leslie J. Bergmeier, 6630 Clayton Rd., Richmond Heights, Zone 17, structural engr. John D. Falvey, 316 N. 8 St., St. Louis, Zone 1, mechanical engr. CD 10/29.

▲ **Mo., Columbia**—BUSINESS & PUBLIC ADMINISTRATION—BA 3/19—Curators of University of Missouri, Dale O. Bowling, bus. mgr., 116 Jesse Hall, Columbia, business and public administration bldg. $1,500,000. Marshall & Brown, 1016 Baltimore Ave., Kansas City, Mo., archts. CD 12/21/56.

Mo., Maryville—HEALTH AND PHYSICAL EDUCATION—BA 3/19— Northwest State College, c/o Luther G. Belcher, Jr., bus. mgr., Maryville, 178x215 ft., about 48,000 sq. ft. brick, steel health and physical education bldg. Extended date. $500,000. Plans deposit $50. Emil O. Bayerl, 20 W. 9 St., Kansas City, Mo., and Raymond Herschman, Terminal Warehouse Bldg. South, St. Joseph, archts. Wm. Lacassell, 912 Baltimore, Kansas City, Mo., engrs. CD 2/17.

Tex., Longview—COURTHOUSE—BA 3/19—Gregg Co., c/o Comrs. Court, courthouse annex. $600,000. Plans deposit $25. Smith, Warder & Yost, 310 Methin St., archts. Zumwalt & Vinther, Merc. Sec. Bldg., Dallas, engrs. CD 10/14.

Mo., Jefferson City—PHYSICAL HEALTH—BA 3/20—Lincoln University, Bd. Curators, Jefferson City, 2 story, brick, masonry blocks, stone, steel, concrete, etc., physical health education and gymnasium bldg. with facilities for seating 1,900 spectators. $700,000. Plans deposit $100. Marcel Boulicault, 411 N. 7th St., St. Louis, Zone 1, archt. CD 2/18.

▲ **Mo., Rolla**—ENGINEERING—BA 3/20—Curators of University of Missouri, Parker Hall Auditorium, Rolla, 3 story, 75x210 ft. brick, masonry, blocks, steel, concrete electrical engineering bldg. for Missouri School of Mines & Metallurgy. $1,000,000. Plans deposit $50. Curators of University of Missouri, Dale O. Bowling, bus. mgr., 116 Jesse Hall, Columbia, Mo. P. John Henenes & Assocs., 4227 Watson Rd., St. Louis, Zone 9, archts. John D. Falvey, 316 N. 8 St., St. Louis, Zone 1, mechanical engr. CD 12/21/56.

▲† **Kan., Fort Leavenworth**—HOSPITAL, etc.—BA 3/25—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., 3 story, brick, masonry 90-bed hospital and 6,000 sq. ft. heating plant, ENG-23-028-58-25. $3,300,000. Plans deposit $40. CD 1/21.

▲ **Neb., Nebraska City**—HOSPITAL—BA 3/25 (tentative) St. Marys Hospital, (Dr. G. Zimmerman) Nebraska City, St. Marys Hospital addns., alterations. $1,400,000. John Latsner & Sons, 1304 Farman St., Omaha, archts. CD 11/19.

▲ **Tex., Houston**—MERCANTILE—BA 3/25—Sakowitz Bros., 1111 Main St., 100,000 sq. ft. steel frame mercantile. $1,000,000. Plans deposit $50. Werlin & Kiefner, 3501 Buffalo St., archts. Walker P. Moore, 2 Pinedale and I. A. Naman & Assocs., 3305 Montrose, engrs. CD 4/15/55.

HEAVY CONSTRUCTION—SLC

▲ **Texas**—J. B. Thomas, pres.-genl. mgr., Texas Electric Service Co., Electric Bldg., at office Freese & Nichols, consult. engrs., 407 Danciger Bldg., Fort Worth, soon lets contract constr. Champion Creek Dam on Champion Creek near Colorado City. $1,000,000. CD 9/10.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

Brogan Constr. Co., 321 Locust St., Des Moines, Iowa, CA **$779,919,** Bridges Nos. 9032, 9033, 9068 and 9069, near Rochester, Olmsted Co. Bids Jan. 31. CD 2/6, under LB.

Platte Valley Constr. Co., Grand Island, Neb., CA **$315,266,** Part I, floodways, Chippewa River Tributaries and Hawk Creek Watershed Protection Proj., BENSON, MINN. Swift Co., A. E. Nelson, aud., Benson, Minn. Grand total $436,263. CD 12/16;

Pederson Bros., Montevideo, Minn., CA **$61,253,** Part 2, bridges (Benson, Minn.);

Barnard-Curtiss Co., 808 Phoenix Bldg., Minneapolis, Minn., CA **$59,734,** part 3, structures (Benson, Minn.).

▲ **Parsons Constr. Co.,** 2512 Deer Park Blvd., Omaha, Neb. LB **$2,024,000,** est. $1,850,000 sewage disposal plant, 60th and Harrison St., OMAHA, NEB. City, M. J. Dineen, clk., City Hall, Omaha, Neb. Bids Feb. 18. CD 1/15.

OKLAHOMA—State Hy. Dpt., Capitol 5, Oklahoma City,

Okla.—**Floyd J. Freeman,** 724 Laird Ave., Lawton, Okla. CA **$850,927,** est. $913,645, conc. paving and stabil. aggr. base with b. conc. surf. course, 2.614 mi. US 62 north of Lawton, Comanche Co.; CA **$194,912,** est. $231,961, c. conc. paving and 1 bridge, 0.707 mi. from just north of Junction US 62 and US 281 at Lawton N., Contr. U-232 (5), 220, Comanche Co.;

Okla.—**Steinberg-Boyd Co.,** 1514 South 79th St., Tulsa, Okla. CA **$109,392,** est. $109,673, stab aggr. base bit. surf. 6.798 mi. county road from Carrier north of the Grant Co. line, Garfield Co.;

Okla.—**Clarence Keck,** Fairview, Okla. CA **$108,076,** est. $119,793, grade, drain 6.957 mi. Hy. 46, north of Gage, Ellis Co.;

Okla.—**Peter Kiewit & Sons Co.,** Southeast Station, Wichita, Kan. CA **$418,439,** est. $492,011, c. conc. 1.7 mi. US No. 62, in Muskogee, Muskogee Co.;

Okla.—**Fischer Constr. Co.,** Norman, Okla. CA **$157,297,** est. $177,244, c. conc. 2.005 mi. US No. 60, west of Pawhuska, Osage Co.;

Okla.—**Pool Constr. Co.,** Box 540, Shawnee, Okla. CA **$287,247,** est. $349,100, stab. aggreg. base with rock asph. surface 7.818 mi. Highway No. 21, north of Broken Bow, McCurtain Co.;

Okla.—**Haskell Lemon,** 3014 NW 49th St., Oklahoma City, Okla. CA **$354,478,** est. $431,862, stab. aggreg. base and b. conc. 5.244 mi. on US No. 70, through Mannsville, Johnston Co.;

Okla.—**Clark Constr. Co.,** Woodward, Okla. CA **$385,979,** est. $387,059, grading, drainage for four lane highway 3.635 mi. US No. 66 from Weatherford to the Caddo Co. line, Custer Co.;

Okla.—**McConnell Constr. Co.,** Route 3, Box 619, Oklahoma City, Okla. CA **$160,139,** est. $160,571, asph. stab. base and single bitum. surface 4.357 mi. Hy. 59, -B north and east of Lindsay, Garvin Co.;

Okla.—**Simms Co.,** Duncan, Okla. CA **$117,852,** est. $151,917, grading, draining and 1 bridge 7.381 mi. Hy. No. 89, from Ringling to Stephens Co. line, Jefferson Co. Grand total $3,179,883. Bids Feb. 18. CD 2/6.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol 5, Oklahoma City,

Okla.—**Lyles & Buckner,** Commercial National Bank, Muskogee, Okla. CA **$534,275,** est. $617,258, concrete, steel bridge over South Canadian River on Hy. No. 17 near Asher, Pottawatomie Co.;

Okla.—**Fischer Constr. Co.,** National Bank Bldg., Norman, Okla. CA **$492,117,** est. $547,851, six concrete, steel bridges on US No. 62, north of Lawton, Comanche Co.;

Okla.—**Gregg Constr. Co.,** Henryetta, Okla. CA **$210,309,** est. $232,033, highway and stream separation bridge on US No. 66, east of Weatherford, Custer Co. Grand total $1,236,701. Bids Feb. 18, awarded Feb. 19. CD 2/6.

▲ **Guy H. James Constr. Co.,** 4901 North Sewell St., Oklahoma City, Okla., CA **$1,109,117,** est. $1,200,000 impounding reservoir on Boggy Creek, north of Atoka, OKLAHOMA CITY, OKLA. City, City Hall, Oklahoma City, Okla. Bids Feb. 11, awarded Feb. 18. CD 2/17, under LB.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 2/18,

Tex.—**Tri-State Constr. & Equip. Co., Inc.,** P.O. Box 1431, Borger, Tex. LB **$72,511,** grading, structures, base and surf. 5.189 mi. Hy. FM 2411, Proj. S 2250 (1) Bosque Co., CD 1/24; LB **$327,067,** flex. base and 2 course surf. treat. 5.143 mi. Hy. US 180, Proj. F 382 (8) Palo Pinto Co., CD 1/24; LB **$278,628,** grading, structures, base and surf. 14.278 mi. Hy. FM 2214 & Proj. R 1697-2-3 & C 550-1-3, Eastland Co., CD 2/5;

Tex.—**Angelo Constr. Co.,** P.O. Drawer 1631, San Angelo, Tex., LB **$113,767,** hot mix b. conc. 7.659 mi. Hy. US 84, Proj. F 366 (4) Hockley Co., CD 1/24; LB **$278,308,** seal coat 283,422 mi. Dist. 6, Ward, Ector, Midland, Martin, Reeves, Pecos, Crane, Loving, Andrews, Howard Counties, CD 2/5;

Tex.—**Harrison Eng. & Contg. Corp.,** 3706 Broadway, Kansas City, Mo., LB **$2,487,593,** fdn. course and c. conc. 6.438 mi. Hy. IH 45, Proj. I 370, Montgomery Co.;

Tex.—**Norman L. Larson, George Kies and T. H. James & Co., Inc.,** P.O. Box 5216, Austin, Tex., LB **$1,043,959,** flex. base and c. conc. 3.360 mi. Hy. 287, Proj. F 451 (5) & F. Fg. 451 (7) Wilbarger Co.;

Tex.—**Harry Campbell,** Rte. 5, Box 68-A, Abilene, Tex. LB **$130,768,** flex. base and surf. 14.817 mi. Hy. US 290, Proj. C 141-1-11, Crockett Co.;

Tex.—**Jeff Richards,** 515 Hackberry St., Clifton, Tex. LB **$172,864** seal coat, Distr. 9, 181.282 mi. Proj. C 55-2-12 etc. Hamilton, Coryell, McLennan Falls, Limestone, Hill, Bosque and Bell Counties;

Tex.—**R. B. Bowden,** P.O. Box 171, San Marcos, Tex. LB **$204,236,** seal coat 161.190 mi. Hys. 90A, US 59, 84, 183, SH 35, etc. Proj. C 27-4-13, C 89-4-18, C 89-5-2 etc. Wharton, Jackson, Gonzales, Victoria, Dewitt, Calhoun, Fayette and Lavaca Counties;

Tex.—**G. C. McBride, Inc.,** P.O. Box 500, Brownwood, Tex. LB **$111,130** hot mix b. conc. 21.31 mi. Hy. US 287, 67 and SH 342 Proj. C 48 3-27 etc., Ellis Co.;

Tex.—**Gaylord Constr. Co.,** P.O. Box 6157, Houston, Tex. LB **$78,367,** flex. base, c. conc. widening and hot mix b. conc. 1.321 mi. Hy. US 75, Proj. C 110-4-38, Montgomery Co., CD 2/5;

Tex.—**Parker Constr. Co.,** P.O. Box 3506, Odessa, Tex. LB **$117,758,** grading, structures, base and surf. 8.239 mi. Hy. FM 1369 and 1213 US 80 and Serv. US 80 Proj. S 2283 (1) S 2284 (1) and C. 5-2-23-24, Midland Co.;

Tex.—**Gilvin-Terrill, Inc.,** P.O. Box 2268, Amarillo, Tex. LB **$163,090** hot mix b. conc. 16.828 mi. Hy. US 82 and FM 264, Proj. F 443 (27) Dickens Co.;

Tex.—**R. N. Adams,** P.O. Box 581, Kaufman, Tex. LB **$139,238** grading, structures, base and surf. 5.254 mi. Hy. FM 988, 1388 FM 1389 and 2451, Proj. S 2211 (1) S 2212 (1) C 751-3-9, S 2213 (1) and C 1395-1-4, Kaufman Co.;

Tex.—**Aycock-Mitchell, Inc. & M&A, Inc.**, P.O. Box 688, Marshall, Tex. LB **$132,053** grading, structures base and surf. 6.093 mi. Hy. FM 2445 Proj. S 2288 (1) Grimes Co.;

Tex.—**Harry Newton Inc.**, Grisham Land Office Bldg., Graham, Tex. LB **$206,438** flex. base, concrete and HM ACP 0.661 mi. Hy. US 180. Proj. F 132 (11) and FG 132 (12) Parker Co.;

Tex.—**V. T. Collins**, P.O. Box 339, Kingsville, Tex. LB **$129,389** grading, structures base and surf. 17.564 mi. Hy. FM 1472 Proj. S 2286 (1) Webb Co.;

Tex.—**Vowell Constr. Co.**, P.O. Box 253, El Paso, Tex. LB **$76,119** hot mix b. conc. 4.466 mi. Hy. US 80A, Proj. C 1-4-32 El Paso Co.;

Tex.—**Bryan & Hoffman**, P.O. Box 390, Plainview, Tex. LB **$394,333** flex. base 2 and 3 course surf. treatment 23.223 mi. Hy. SH 194 FM 2284 and 2294. Proj. 2021 (2) & S 2289 (1) Hale Co. CD 1/24.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 2/19.

Tex.—**Public Constr. Co.**, P. O. Box 380, Denton, Tex. LB **$104,213** c. conc. 8.108 mi. Hy. IH 30. Proj. C 9-12-16, Rockwall Co. LB **$254,557** c. conc. 48.524 mi. SH 19, US 79 and US 287, Proj. C 108-6-10, C 107-7-9, C 108-7-11 C 122-4-14, C 122-5-5, C 205-7-21, Anderson Co. CD 2/5;

Tex.—**Hugh McMillan, Inc.**, P.O. Drawer, 1612, El Paso, Tex. LB **$237,822.** seal coat Proj. C-1-1-21, C 2-9-10, C 75-1-8, C 233 1-12, etc. El Paso, Hudspeth, Brewster, Culberson, Presidio Counties. CD 2/5; LB $116,040, hot mix c. conc 15.789 mi. Hy. US 80, Proj. C-2-4-23, Hudspeth Co. CD 1/24;

Tex.—**C. C. Booth & Maupin Constr. Co.**, P.O. Box 508, Stephenville, Tex. LB **$145,363.** grading, structures base and surf. 5.828 mi. Hy. FM 2027, Proj. S 1903 (2) Brown Co.;

Tex.—**W. O. Pelphrey, Fortune Arms**, 200 Burnett, Fort Worth, Tex. LB **$103,698.** c. conc. 4.254 mi. Hy. SH 317, FM 2271 and FM 2305, Proj. C 398-4-21 and C-2137-1-2 and C 232-4-2, Bell Co.;

Tex.—**Harry Newton, Inc. & Dean Skinner**, Graham Land Office Bldg., Graham, Tex. LB **$263,754.** flex. base and 2 course surf. treatment 3.491 mi. Hy. SH 360, Proj. S 2241 (1) and C 2266-2-4, Tarrant Co.;

Tex.—**Spaw-Glass, Inc.**, 2411 Times Blvd., Houston, Tex. LB **$198,373.** grading, structures base and surf. 9.587 mi. Hy. FM 517, Proj. C 1002-2-1 and C 978-1-4, Galveston Co.;

Tex.—**H. V. Cover, Inc.**, P.O. Box 184, Atlanta, Tex. LB **$96,360.** flex. base 1 course surf. treatment and b. conc. 1.551 mi. Hy. US 80, Proj. F 109 (11) Wood Co.;

Tex.—**Ray Boswell**, P.O. Box 537, Pampa, Tex. LB **$114,672.** grading, structures base and surf. 4.963 mi. Hy. FM 2388, Proj. S 2243 (1) Hamphill Co.;

Tex.—**Moore Bros. Constr. Co.**, P.O. Box 35, Lufkin, Tex. LB **$160,872.** grading, structures base and surf. 6.450 mi. Hy. FM 1280, Proj. S 2130 (2) Houston Co. CD 1/24;

Tex.—**Strain Bros., Inc.**, P.O. Drawer, 1631 San Angelo, Tex. LB **$513,390.** base and c. conc. 46.788 mi. Hy. FM 703, St. 82 and 115, Proj. 354-6-5, C 292-1-11 C. 354-4-10, C. 354-4-9, C 292-2-10, 354-1-14 and C 354-4-8, Andrews and Winkler Counties;

Tex.—**Cooper & Woodruff, Inc.**, 204 Mays Bldg., Amarillo, Tex. LB **$942,997.** flex. base and c. conc. 14.443 mi. Hy. US 87,287, SH 354, and FM 1913, Proj. F 1069 (5) and S 2290 (1) Moore Co.;

Tex.—**Ben Sira & Co.**, P.O. Box 11645, Dallas, Tex. LB **$2,542,913.** c. conc. and grade separation structures 2.772 mi. Hy. St. 183, Proj. U 634 (21) Dallas Co.;

Tex.—**Joe Davidson**, P.O. Box 439, Terrell, Tex. LB **$298,920.** grading, structures base and surf. 10.215 mi. Hy. FM 1143, 550, 35 and 2453, Proj. S 2261 (1) Rockwall Co.;

Tex.—**J. W. Perry & C. H. Allison Constr. Co.**, 501 Ins. Bldg., San Antonio, Tex. LB **$308,342.** seal coat 228.49 mi. SH 9, SH 359, Loop 359, US 181, etc. Proj. C 74-2-12, C 74-3-6, etc. Live Oak, San Patricio, Bee, Refugio, Karnes, Aransas, Goliad, etc. Counties;

Tex.—**Ross C. Watkins**, P.O. Box 647, Laredo, Tex. LB **$75,935.** fdn. course and c. conc. 1.251 mi. Hy. US 277, Proj. C 299-4-1 and C 300-1-20, Maverick Co.;

Tex.—**Delta Paving Co.**, P.O. Box 10365, Dallas, Tex. LB **$239,755.** addnl. c. conc. surfacing and widening 14.829 mi. Hy. SH 183 and Loop 12, Proj. C 94-3-20, C 353-5-4 and C 591-1-27, Dallas Co.;

Tex.—**Kidwell & Rogers Constr. Co.**, 4515 Prentice Dallas, Tex. LB **$97,308.** structures and approaches 1.533 mi. Hy. RM 42, Proj. C 825-1-6, Menard Co.;

Tex.—**Gilvin Terrill, Inc.**, Box 2268, Amarillo, Tex. LB **$112,992.** flex. base and c. conc. 1.456 mi. Hy. SH 217, Proj. C 168-11-8 and C 464-1-9, Randall Co.;

Tex.—**G. C. McBride Inc**, P.O. Box 500, Brownwood, Tex. LB **$93,102.** c. conc. and shoulder seal 15.24 mi. Hy. US 67 and 377, Proj. C 79-3-18, Comanche Co. CD 2/5.

TEXAS—State Hy. Comn., Austin, Bids opened 2/19.

Tex.—**R. B. Butler, Inc.**, P.O. Box 471, Bryan, Tex. LB **$651,115.** Trinity River Bridge and approaches 2.730 mi. Hy. SH 21, Proj. F 486 (5) Houston and Madison Counties;

Tex.—**Luther A. Turner**, P.O. Box 542, Buda, Tex. LB **$78,312.** bridges, approaches 0.756 mi. Hy. FM 63, Proj. C 483-2-5, McMullen Co. CD 1/24.

▲ **O. R. Burden Constr. Co.**, 6702 E. 21st St., Tulsa, Okla., CA **$2,700,000.** 9u mi. 16 in. crude line between Hawley to Comyn in Comanche Co., TEXAS. Humble Pipeline Co., 1216 Main St., Houston, Tex. CD 11/20.

BUILDINGS—LB & CA

▲ **W. M. C. Inc.**, Winona, Minn., LB **$1,024,800** (11 bidders), general contract 2 story north wing and 1 story south wing, HIGH SCHOOL, incl. 100 x 110 ft., GYMNASIUM, etc. FARIBAULT, MINN. Bd. Educ., T. Paulus, clk., Faribault, Minn. Bids Feb. 18, CD 1/22;
Sornsin Constr. Co., Fargo, N. D., LB **$356,800** (2 bidders), mechanical, plumbing, heating, ventilating, (Faribault, Minn.).

Adolfson & Peterson, 2817 Bryant Ave. South, Minneapolis, Minn., CA **$597,250**, general contract ELEMENTARY SCHOOL, WAYZATA, MINN. Bd. Educ., J. J. Kardong, clk., Wayzata, Minn. Haarstick, Lundgren, 1st Natl. Bank Bldg., St. Paul, Minn., archts. Bids Dec. 3. CD 12/9, under LB.

▲ **The Weitz Co., Inc.**, 406 Fleming Bldg., Des Moines, Iowa, LB **$1,084,730,** (6 bidders), demolish existing structure and constr. 1 story and part 2 story, penthouse and part bsmnt., approx. 47,200 sq. ft., air-conditioned POST OFFICE (lease-purchase) Main, Jefferson, Front and Washington Sts., Proj. No. 13901, BURLINGTON, IOWA. General Service Admin., c/o William Holloway, regional dir., 2306 Bannister Rd., Kansas City, Mo. Bids Feb. 14. CD 12/19.

McCarthy Bros. Constr. Co., 4903 Delmar Blvd., St. Louis 8, Mo., CA **$531,440**, general contract alterations addns. to five DORMITORY COTTAGES and ADMINISTRATION BLDG. at Hospital, FARMINGTON, MO. Missouri State Hospital No. 4, c/o Ralph McSweeney, dir. P. Wks., 100 State Capitol, Jefferson City, Mo. Bids Jan. 8. CD 1/15, under LB.

▲† **J. W. Bateson Co., Inc.**, 10130 Monroe Dr., Dallas, Tex., CA **$21,884,200**, constr. 1,329 Capehart HOUSING UNITS, ENG-23-028-58-1. FORT LEONARD WOOD, MO. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Aug. 15. CD 8/19, under LB.

▲ **Sam Dasta & Sons Constr. Co.**, 715 Charlotte St., Kansas City, Mo. CA Est. **$1,500,000**, 2 story, 185 x210 ft., steel frame 70,000 sq. ft. plus 9,000 sq. ft. utility and aux. space OFFICE for Civil Aeronautics Admin., 4825 Troost, KANSAS CITY, MO. Terrydale Corp., 4452 Main St., Kansas City, Mo. Awarded Feb. 10. CD 2/12.

▲ **Christina Constr. Co. Inc.**, 5267 Northrup Ave., St. Louis 10, Mo., LB **$1,414,600**, est. $1,000,000 (14 bidders) brick, glass masonry blocks, rein.-con. frame JUNIOR HIGH SCHOOL, incl. GYMNASIUM, swimming pool, etc., LADUE (St. Louis 24 P. O.) MO. Ladue School Dist. Bd. Educ., Dr. Ivan C. Nicholas, supt. Schools, 1201 S. Warren Rd., Ladue 24, Mo. Bids Feb. 20. CD 2/3.

† **Martin K. Eby**, 610 N. Main St., Wichita, Kan. LB **$824,775** (9 bidders) 3 story, 25,000 sq. ft. each floor bachelor OFFICER'S QUARTERS with MESS, incl. 3 parking lots ENG-23-028-58-14, FORT LEAVENWORTH, KAN. U. S. Eng., 1800 Federal

ROCKFORD

MORLIFE® CLUTCHES

Keep Heavy-Duty Machines 400% More Hours ON the Job 90% Less Time IN the Shop

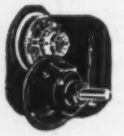
MORLIFE clutches serve from four to ten times longer than previous types of friction clutches using organic facing materials. *Adjustments and plate replacements have been reduced to one-tenth those required by previous clutches.* The longer on-the-job hours and increased pay loads which MORLIFE clutches make possible furnish a competitive advantage for machines in which these NEW clutches are used. Increased clutch life results in decreased operation cost of vehicles or equipment.

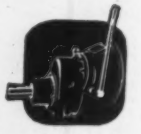
Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center


Power Take-Offs


Speed Reducers

SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

313 Catherine St., Rockford, Ill., U.S.A.

Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

Office Bldg., 911 Walnut St., Kansas City 6, Mo. Bids Feb. 13. CD 1/15.

▲ **Lippert Bros. Co.**, 2800 North Santa Fe, 5, Oklahoma City, Okla., CA **$2,780,000**, 9 story, 140 x 150 ft. OFFICE BLDG., 6th and Robinson Sts., OKLAHOMA CITY, OKLA. Southwestern Bell Co., Home State Life Bldg., Oklahoma City, Okla. Bids Jan. 28, CD 1/24.

▲ **Langeley Constr. Co.**, 2400 North Lewis, Tulsa, Okla., CA **$1,441,000**, Orville Wright JUNIOR HIGH SCHOOL, 4500 South Peoria St., TULSA, OKLA. Bd. Educ., 410 S. Cincinnati St., Tulsa, Okla. Bids Feb. 14, awarded Feb. 19. CD 1/28.

▲ **H. A. Lott**, Box 6766, and **Johnson, Drake & Piper**, Bank of Commerce Bldg., Houston, Tex. CA **$2,229,804** Burrus SENIOR HIGH SCHOOL, HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol St., Houston, Tex. Bids Jan. 16. (Correction—contractors). CD 2/5, under CA.

G. W. Mitchell, Box 8308, Laurel Heights Station San Antonio, Tex. LB **$583,657**, est. $400,000 "La Villita" Convention Hall, and Civic Center, San ANTONIO, TEX. City Pub. Service Bd. Navarro and Villita Sts., San Antonio, Tex. Bids Feb. 13. CD 1/29.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 3/20—U. S. Eng., 751 S. Figueroa St., Los Angeles, Imprv. Big Dalton Wash Channel, San Dimas Wash to Los Angeles St., ENG-04-353-58-14. $2,500,000. CD 10/24.

▲† **Calif., Long Beach**—REMEDIAL MEASURES—BA 3/21—Eleventh Naval Dist., 1220 Pacific Hy., San Diego subsidence remedial measures second increment Long Beach Naval Shop Yards, Spec. 9997-57. $1,-000,000. CD 9/18.

▲† **Calif., Lompoc**—AIR FIELD PAVEMENTS—BA 3/25—U. S. Eng., 751 S. Figueroa St., Los Angeles, constr. air field pavements at Cooke Air Force Base, ENG-04-353-58-38. $5,500,000. CD 3/5, under Public Bldgs.

▲† **Wash., Spokane**—AMMO STORAGE, etc.—BA 3/25—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, ammo storage, ADC type, with five 39 x 148 ft. rein.-con. underground storage mags, access roads, etc., ENG-45-108-58-71. Over $1,000,000. CD 9/16.

▲ **Calif., Santa Ana**—BA 3/26—Orange County Flood Control Dist., 600 North Broadway, constr. Fullerton Creek Channel Part 2, from Knott Ave. to Highland Ave., Buena Park area. $1,573,687. CD 7/3/56.

BUILDINGS—BA

Calif., Pasadena—OFFICE—BA 3/17—Investors Savings & Loan Assocs., 50 S. Los Robles, selected list of bidders, 3 story, bsmnt., rein.-con. office bldg. $725,-000. Bank Bldg. & Equipment Corp. of America, 906 Sidney, St. Louis, Mo., and Howard Musick, 355 Stockton, San Francisco, archts. E. S. Pankhurst, 2610 E. Colorado Bldg., engr.

† **Calif., Camp Pendleton**—BA 3/18—Dist. P. Wks. Office, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, sewage pumping station and collection sys., Spec. 11680-57. $500,000. CD 9/19.

Utah, Salt Lake City—ENGINEERING—BA 3/18—first phase engineering bldg. for Utah State University. $630,000. Plans deposit $50. Dean L. Gustavson, 508 Newhouse Bldg., archt. CD 6/5.

▲ **Wash., Seattle**—MECHANICAL ENGINEERING—BA 3/18—University of Washington, E. 45 St. and 17 Ave., Zone 5, 3 and 5 story, 96,000 sq. ft., rein.-con. mechanical engineering bldg. $1,850,000. General Contract plans deposit $75. Carlson-Eley-Grevstad, 432 Eastlake Ave., archts. CD 2/25.

Calif., Pomona—BUSINESS CLASSROOM—BA 3/19—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 2 story, rein.-con. frame business classroom bldg. at California State Polytechnic College, Kellogg Campus, W. O. 4005GC-16. $500,000. Plans deposit $50. CD 1/10.

▲ **Calif., San Diego**—SCIENCE BLDG., etc.—BA 3/19—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 3 story, 2 bsmnts. about 105,000 sq. ft. floor area science bldg. addn. W.O. 3719GC-58 at San Diego State College. $2,250,000. Plans deposit $100. CD 7/24.

▲ **Utah, Magna**—POWER PLANT—BA 3/21—Utah Copper Division, Kennecott Copper Corp., Kearns Bldg., Salt Lake City, power plant addn. $16,000,000. Kuljian Corp., 12 North Broad St., Phila. 21, Pa., engrs. (Correction—status of engineer and project). CD 1/29, under CA.

Calif., Oakland—SCHOOL—BA 3/25—Oakland City Unified School Dist., c/o Supt., 1025 2nd Ave., 1 story, wood frame, stucco, Longfellow Elementary School, $623,600. Plans deposit $25. Cantin & Cantin, 5652 College Ave., archts. Kellberg, Paquette & Maurer, 417 Market St., San Francisco, engrs. CD 3/22.

▲† **Wash., Spokane**—HYDRANT FUELING SYSTEM, etc.—BA 3/25—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, enlarge and modify hydrant fueling sys., involving ten 50,000 gal. underground storage tanks and 14,000 ft. 4- to 10-in. jet fuel piping, ENG-45-108-58-70. Over $1,000,000. CD 9/16.

BUILDINGS—SLC

▲ **Calif., Redondo Beach**—HOSPITAL—BA 3/12—South Bay Hospital Dist., Redondo Beach, soon lets contract 4 story rein.-con. hospital. **$2,165,000**. CD 3/18.

Withdrawing a pile with a McKiernan-Terry E4 Pile Extractor hung from a steel strongback suspension that exerts downward pressure on the pile next to the one being removed. The cable strongbacks and a cable from the crossbar to a deadman give the unit additional strength. McKiernan-Terry Corporation, 82A Richards Ave., Dover, N. J.

McGraw-Hill Mailing Lists Will Help You

- Merchandise your advertising
- Conduct surveys
- Get inquiries and leads for your salesmen
- Pin-point geographical or functional groups
- Sell direct
- Build up weak territories
- Aid dealer relations

Direct Mail is a necessary supplement to a well rounded Business Paper advertising program.

Most progressive companies allocate a portion of their ad budgets to this second medium at the same time as they concentrate on the best business publications.

600,000 of the top buying influences in the fields covered by the McGraw-Hill publications make up our 150 mailing lists. Pick YOUR prospects out of our Industrial Direct Mail catalogue.

Write for your free copy. It contains complete information.

MAYO PNEUMATIC GROUTER and "PEA SHOOTER"

Simple to Operate Highly Efficient

The Mayo Grouter quickly and easily places low-pressure grout in tunnels, mines, shafts, foundations, and subgrades. It also may be used to inject sodium silicate emulsions for stabilizing caving or running ground.

This versatile piece of equipment can readily be converted to a "Pea Shooter" for shooting Pea or "Birds Eye" gravel back of liner plates and backpacking outside lagging plates.

Write for Free Bulletin 13 for full details and specifications.

MAYO

TUNNEL AND MINE EQUIPMENT

LANCASTER, PENNA.

PREDRAIN

Your Wet Jobs And Make More

PROFIT

MORETRENCH WELLPOINT SYSTEM

MORETRENCH CORPORATION

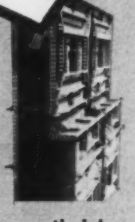
World's Oldest . . . Largest . . .
Most Experienced
Predrainage Organization

Send for Catalog

90 West St., New York 6, N. Y.

Chicago, Ill. • Tampa, Fla. • Houston, Tex.
Rockaway, N. J.

SAVE MONEY when pouring concrete RENT ECONOMY STEEL FORMS



Economy Steel Forms save time, labor, material. Quickly lock together with simple twist of a clamp. Standard units fit most jobs. Where needed, special forms can be fabricated to specification.

Other forms available on a purchase basis

Economy Forms Corporation A
Box 128, H. P. Station
Des Moines, Iowa

Please send catalog and address of nearest sales office (there are 21 coast-to-coast).

Name_____

Firm name_____

Street address_____

City_____ State_____

Wash., Bellevue—SHOPPING CENTER—Eastside Homes, Inc., Bellevue, soon lets contract, 3 masonry bldgs. totaling 30,000 sq. ft. for Lake Hills shopping center. $500,000. Turner & Hargreaves, Exch. Bldg., Seattle, Zone 4, archts. CD 1/22.

HEAVY CONSTRUCTION—LB & CA

† **Dale Benz, Inc.,** 1912 W. Grant St., Phoenix, Ariz. CA **$659,450,** hangar, motor park and utilities, ENG-04-353-58-18, FORT HUACHUCA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 6, awarded Feb. 10. CD 2/12, under LB.

WASHINGTON—State Hy. Comn., E. A. Cowell, chn., Olympia, Bids opened 2/4,

Wash.—General Constr. Co., 4850 N. W. Front St., Portland, Ore., LB **$111,955** (5 bidders), reconstr. pier protection for Columbia River Bridge at Longview, Cowlitz Co.;

Wash.—H. Hagman, Hazelwood Tracts, Spokane, Wash., LB **$99,146** (12 bidders) rein.-con. box girder bridge for G. N. R. R. overcrossing near Steptoe on 0.037 mi. Primary State Hy. 3, with drainage facilities, FAP No. F-037-2(4), Whitman Co.;

Wash.—Lockyear & White, Longview, Wash., LB **$91,576** (20 bidders), steel girder bridge and shoofly for N. P. R. R. undercrossing, Yacolt branch, on Primary State Hy. 1, FAP No. IG-001-1(34), Clark Co.;

Wash.—W. G. Meyers & Sons, N. 1407 Calispel St., Spokane, Wash., LB **$203,755** (18 bidders), steel truss bridge over Naches River on 0.058 mi. Primary State Hy. 5, FAP No. U-018-2(2), Yakima Co. CD 1/21.

WASHINGTON—State Hy. Comn., E. A. Cowell, chn., Olympia, Bids opened 2/4,

L. W. Vail Co., 1948 N. 4 St., Pasco, Wash., LB **$450,338** (5 bidders), surf., bit. surf. treatment, b. conc. paving constr. rein.-concrete flat slab bridge, and illumination sys. on 10.554 mi. State Hys. Nos. 3, 8 and 3-R and a Kennewick City Street, Junction PSH No. 8 to Kennewick Ave., et al FAP Nos. F-047-2(4) and U. S.-0452(3), Benton Co. CD 1/21.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 2/19,

Rothschild, Raffin & Weirick, 274 Brannan St., San Francisco, Calif. LB **$1,053,446** (6 bidders) connecting ramp structures between existing Carquinez Bridge and new freeway approach now being built in Contra Costa Co., widening, resurf. roadway on present bridge and imprv. hy. between north end of existing bridge and toll plaza as last major contract in project of bldg. new crossing and converting present bridge to one way, Solano and Contra Costa Counties. CD 1/13.

CALIFORNIA—State Div. Hys., 1120 N St., Sacramento,

Frederickson & Watson Constr. Co., 843-81st Ave. Oakland, Calif. CA **$940,736** grading, paving 5.1 mi. U. S. Hy. 101 to 4-lane expressway between Buellton and 1 mi. south of Zaca, V.-SB-2-D, Santa Barbara Co. Bids Jan. 15, awarded Jan. 28. CD 1/21, under LB.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 2/20,

N. M. Saliba Co., 15905 S. Broadway, Gardena, Calif., LB **$779,988** (10 bidders) 3 bridges over North Fork of Coyote Creek flood control channel and 0.9 mi. approach roadways on Santa Ana Freeway and State Sign Rte. 14, Artesia Ave. in Dairy Valley. VII-L.A. 174-175-B, Dy. V., Los Angeles Co. CD 1/24.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 2/20,

E. L. Yeager Co., Yeager Constr. Co., Bert C. Altfillisch, Altfillisch Constr. Co. and Lowe & Watson, P.O. Box 84, Riverside, Calif. LB **$3,772,336** (17 bidders) grading, paving to constr. 7.9 mi. San Diego Freeway US Hy. 101 and between 0.4 mi. south of Trabuco Creek and 0.3 mi. north of Niguel Rd., incl. freeway and frontage road bridges over Trabuco Creek bridges over Oso and Alison Creeks, the El Toro overhead and Oso Rancho and Niguel interchanges, VII ora-2 A. B., Orange Co. CD 1/23.

▲† **Gordon H. Ball,** 300 Camille Ave., Danville, Calif. LB **$1,588,612,** est. $1,748,074 (3 bidders) apron, stub parking and facilities and apron, operational and hydrant fueling sys. at Mather Air Force Base, ENG-04-167-58-14, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Feb. 20. CD 1/27.

BUILDINGS—LB & CA

▲ **Rosenlof Constr. Co.,** 526 S. Idaho Ave., Provo, Utah, LB **$1,694,400** Lehi HIGH SCHOOL, 400 E. and Main St., AMERICAN FORK, UTAH. Alpine School Dist., Frank Jex, dir., American Fork, Utah. Bids Feb. 17. CD 1/20.

▲† **D & L Corp.,** 13238 Sherman Way, North Hollywood, Calif., CA **$3,305,278,** 209 units Capehart HOUSING at Yuma Test Station, ENG-04-353-57-2, YUMA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. CD 8/20, under LB.

▲ **Swinerton & Walberg Co.,** 200 Bush St., San Francisco, Calif., CA Est. **$15,000,000,** PULP and PAPER MILL, WALLULA, WASH. Boise Cascade Corp., 114 S. 10 St., Boise, Idaho. W. O. Hisey, c/o owner, director of central eng.

▲† **Gresham-Alcan Constr. Co.,** 2700 Scott Lane, Santa Clara, Calif., CA **$3,500,000,** constr. 220-unit Capehart Title VIII, FAMILY HOUSING, Kingsley Field, KLAMATH FALLS, ORE. Procurement Officer, Kingsley Field, Klamath Falls, Ore.

Laramore & Dalton, 1111 Beverly, Whittier, Calif. Owner Builds. **$606,000,** fifty-one 34x42 ft. stucco DWELLINGS, 1591 Juno St., Lots 1-51, Tr. 1812, ANAHEIM, CALIF.

▲ **Dinwiddie Constr. Co.,** 210 Crocker Bldg., San Francisco, Calif., CA **$7,733,000,** est. $5,000,000 (6 bidders) four 9 story RESIDENCE HALLS, BERKELEY, CALIF. Regents of University of California, Admin. Bldg., Berkeley, Calif. Bids Jan. 21. CD 1/28, under LB.

▲ **H. Cedric Roberts & Sons,** 9901 Katella St., Anaheim, Calif. Owner Builds. **$2,000,000** constr. 7 level, steel frame, stucco, concrete 500 sq. ft. each 32 family units, at 2519 Ocean Blvd., CORONA DEL MAR, CALIF. CD 8/12.

Slater & Dul & Dale Merton, Inc., 1967 1st St., San Diego, Calif. Owner Builds. **$731,727,** 58 frame, stucco DWELLINGS, Tangerine and Navelo and Bluebell Way, Greenfield Grove Subdivision, EL CAJON, CALIF.

Hunsaker & Assoc., 9026 Las Tunas Dr., Temple City, Calif. CA **$627,200,** 56 frame, stucco, 1148 sq. ft. DWELLINGS, Tract 2404, Lots 1-56 (inclusive), GARDEN GROVE, CALIF. Randale Three, Inc., 9026 E. Las Tunas Dr., Temple City, Calif.

Ramo-Wooldridge Corp., Box 45215 Airport Station, Los Angeles, Calif. Owner Builds. **$400,000** 100,000 sq. ft. OFFICE BLDG., 5500 El Segundo Blvd., LENNOX, CALIF. A. C. Martin, 333 S. Beaudry, Los Angeles, Calif., archt.

Allen Siegel & Samuel Bay, 7315 Sunset Blvd., Los Angeles 46, Calif. Owner Builds. **$532,000** 3 story, 160 x 130 ft. stucco APARTMENT 11600 Montana Ave. lt. 37,38 blk. 26, Westgate tr., LOS ANGELES, CALIF. Raymond Stockdale 3260 Hillock Dr., Los Angeles, Calif., archt. Alan Palo, 1770 N. Vermont Ave., Los Angeles, Calif., engr.

▲ **Paul W. Speer,** 3425 Cahuenga Blvd., Los Angeles, Calif. CA **$2,228,000,** Parkman JUNIOR HIGH SCHOOL, Canoga Park, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Feb. 14, awarded Feb. 17. CD 2/18, under LB.

▲ **F. E. Young Constr. Co. & Morrison Knudson,** 3141 Main St., San Diego, Calif. LB **$8,056,667** (5 bidders) 7 story, 400,000 sq. ft. COURTHOUSE and JAIL, SAN DIEGO, CALIF. Bd. Supervs. San Diego Co., Courthouse, Civic Center, 1600 Pacific Hy., San Diego, Calif. Bids Feb. 18. CD 1/28.

A H G Constr. Co., 5506 University St., San Diego, Calif. CA **$962,110** 88 DWELLINGS, Monarch St., Fermi Ave., Masters Place, Mission Villa Tr. 6, SAN DIEGO, CALIF. Leland & Assoc., 5506 University St., San Diego, Calif.

▲ **William D. Greschner,** 1108 East Washington Ave., Santa Ana, Calif. LB **$1,385,400** (10 bidders) constr. JUVENILE HALL, SANTA ANA, CALIF. Orange Co. Employees Retirement Sys., Courthouse, Santa Ana, Calif. Bids Feb. 17. CD 1/28.

Albert Reingardt, 3631 Atlantic Ave., Long Beach, Calif. LB **$419,612** (12 bidders) 22,000 sq. ft. brick, De Mille Elementary SCHOOL, Midway City, WESTMINSTER, CALIF. Westminster School Dist., 14121 Cedarwood Ave., Westminster, Calif. Bids Feb. 6. CD 1/28.

CANADA

HEAVY CONSTRUCTION—BA

▲† **Newfoundland, Stephenville**—FAMILY HOUSING—BA On Or About 4/15—U. S. Eng., 346 Broadway, New York 13, N. Y., (a) two story, bsmnt., 198 family units (b) one story, bsmnt., two single family units (c) outside utilities and site work for housing units described in subparagraphs a and b, incl. water distr. sewerage sys., elect. distr. and street lighting sys., site grading and drainage, bit. paved roads, conc. sidewalks and curbs, (CY 58) at Ernest Harmon Air Force Base, ENG-30-347-58-7 1st Sect. CD 3/25.

BUILDINGS—BA

Ont., Stratford — COLLEGIATE — BA 3/10 — Stratford Dist. Collegiate Institute Bd., Stratford, 2 story, bsmnt., 68x150 ft. Collegiate extension. $500,000. Kyles & Kyles, 247 John St. S., Hamilton, archts. CD 6/30/55.

▲ **Ont., Guelph**—PLANT—BA 3/14—Imperial Tobacco Co. of Canada Ltd., head office 3810 St. Antoine St., Montreal, Que., (selected list of bidders) mainly 1 story, 400,000 sq. ft., steel, precast concrete, brick and aluminum, some glass in office section, plant for manufacture of tobacco, Over $2,000,000. McDonnell & Lenz, 42 James St. N., Hamilton, archts. Wagner, McCargar & Filer, 42 James St. N., Hamilton, engrs. CD 12/5.

BUILDINGS—SLC

▲ **Que., Montreal**—OFFICE, etc.—Bank of Montreal, Pace D'Armes, Montreal, soon lets contract, constr. foundations only for 14 story office, 153x202 ft. frontage on St. James St. and 130 ft. frontage on Craig St. $10,000,000. Barott, Marshall, Merrett & Barott, 1425 Mountain St., archts. Lindley Shector, 1425 Mountain St., engr. CD 9/17.

HEAVY CONSTRUCTION—LB & CA

▲ **Piggott Constr. Ltd., Pipe Line Division,** Calgary, Alta. CA **$8,000,000,** erect 82 mi. 24 in. oil pipeline from pumping stations at Edmonton to Hardisty, Alta., to Kerrobert and Loreburn, Sask., ALBERTA and SASKATCHEWAN. Interprovincial Pipe Line Co., 10049 Jasper, Edmonton, Alta. Awarded Feb. 14. CD 9/19/48.

▲ **T. C. Gorman (Nova Scotia) Ltd.,** 505 Roy Bldg., Halifax, N. S., CA **$1,824,391,** constr. Annapolis River Dam, to cross river from point about 1/3 of a mile up from Granville Bridge towards Bridgetown to Hog

Island on other side, approx. 850,000 cu. yd. excav., 750,000 tons rock fill and 24,000 cu. yd. concrete, ANNAPOLIS, N. S. Maritime Marshland Rehabilitation Admin., Canada Dpt. Agriculture, Box 248, Amherst, N. S. Bids Jan. 28, awarded Feb. 13. CD 1/27.

▲ **Standard Paving & Materials Ltd.**, Harbour Commission Bldg., Toronto, Ont. LB $1,247,777 (23 bidders) Don Valley Parkway, Bayview Ave. extension, grading, draining, paving incl. grading, drainage Canadian National Rys. and Canadian Pacific Rys. diversions oiling, rein.-con. encasement of 48 in. water main incl. relocation of valve chamber and appurtenances, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Fenco-Harris, 8 Spadina Rd., Toronto, Ont., engrs. Bids Feb. 17. CD 1/30.

▲ **J. D. Sterling Ltd.**, 940 Cote de Liesse Rd., Montreal, Que., LB $2,293,361 (13 bidders) 50 m.g. Rosemount Reservoir, bounded by Beaubien, Bellechase, 16th and 18th Aves., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids Feb. 12. CD 1/15.

BUILDINGS—LB & CA

▲ **M. F. Shurman Co. Ltd.**, Eustane St., Summerside, P. E. I., CA About $2,200,000, 213-unit ROW HOUSING, with services at Army Camp, Camp Gagetown, FREDERICTON, N. B. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Wiggs, Lawton & Walker, 4350 Sherbrooke St. W., Montreal, Que., archts. Wiggs, Walford, Frost & Lindsay, 4350 Sherbrooke St. W., Montreal, Que., engrs. Awarded Feb. 6.

▲ **Stanhome Developments Ltd.**, 4632 Yonge St., Willowdale, Toronto suburb, Owner Builds. $1,000,000, two 80-suite, 5 story, bsmnt., L-shaped, 70 x 130 x 192 ft. APARTMENTS, poured concrete fdns., masonry bearing walls, open-web steel joists, Kennedy Rd. north of Eglinton Ave. W., TORONTO, ONT.

▲ **Louis Corbeil, Inc.**, 1695 Sauve St. E. Montreal, Que., Owner Builds, $2,687,500, HOUSING, Meilleur St., MONTREAL, QUE. Beauvais & Lusignan, 11420 Tolhurst St., Montreal, Que., archts.

Pigott Constr. Ltd., 695 High St. W., Moose Jaw, Sask., CA $525,000 (9 bidders) 200 x 266 ft., precast concrete, CIVIC CENTER, MOOSE JAW, SASK. City, City Hall, Moose Jaw, Sask. Bids Jan. 22, awarded Feb. 13. CD 1/17.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ky., Brownsville**—City, Bd. Trustees, R. A. Demenbrun, chn., Proj. No. PFL-III-15-57, municipal water sys., incl. treatment plant. $140,000. Joynson, Depp & Quisenberry, P. O. Box 672, Owensboro, engrs. CD 2/10.

▲ **Kan., Potwin**—City, City Hall, and Vickers Refinery, Potwin, impounding dam and water supply, etc. $1,000,000. H. R. Hunter, 1923 E. Central St., Wichita, consult. engr.

SEWERS, WASTE DISPOSAL

▲ **Colo., Cortez**—City, City Hall, sewerage facilities (imprvs.) incl. 3 sewage treatment plants, trunk lines, etc. $1,400,000. Harold Hoskins & Assoc., 725 9th St., Greeley, consult. engrs.-archts. CD 2/4/53.

▲ **Ill., Springfield**—City, sewers, resurf. South 5th St. $1,395,000. Charles Nelson, city engr. CD 2/3/44.

▲ **Mass., Boston**—Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., incinerator, Brighton-Watertown. $1,000,000. Thomas Worcester, Inc., 85 State St., Boston, engr. CD 8/12.

▲ **Mich., Flint**—City, Harry K. Cull, clk., sanitary sewers and sewage pumping station; constr. 4 storm sewers. $1,230,000. T. A. Hammon, city engr. CD 8/21/56.

▲ **Mich., Muskegon**—City, A. J. Leutscher, clk., sewage disposal plant addn. $1,142,000. George Clark, city engr. CD 1/18/56.

▲ **S. D., Sioux Falls**—City, City Hall, $1,250,000 bond election Apr. 15, expansion and modernization sewage disposal plant. $1,500,000. CD 4/3.

STREETS AND ROADS

▲ **Mich., Flint**—City, Harry K. Cull, clk., paving 9 streets. $1,170,000. T. A. Hammond, city engr. CD 8/21/56.

▲ **OHIO**—State Hy. Dpt., State Dpts. Bldg., Columbus, Franklin Co.—Fort Hayes Interchange. $15,000,000. Burgess & Niple, 2015 W. 5th Ave., Columbus, consult. engrs. CD 5/24/51.

▲ **Tex., Arlington**—City, Jimmy Vandergriff, mayor, voted bonds Feb. 8, street imprvs. $1,200,000. CD 1/27.

EARTHWORK, WATERWAYS

▲ **California**—East Bay Municipal Utility Dist. 2130 Adeline St., Oakland, bond election June 3, as follows:
Mokelumne River Dams, $42,338,000.
Mokelumne Aqueduct No. 3, $68,233,000.
terminal reservoir storage, $38,906,000.
filter plants, $14,105,000.
pumping plants, $4,279,000.
distr. reservoirs, $26,781,000.
distr. mains, $65,603,000.
service facilities, $22,713,000. CD 8/26.

LATIN AMERICA

▲ **Mexico, Tlacotalpan**—PLANT AND MILL—Nacional Financiera (Financial Agency) c/o Mex. Fed. Govt.,

Here's why you should make PRESSTITE-KEYSTONE a

for all your paving & building product needs

- EXPANSION JOINTS: PREMOULDED ASPHALT AND NON-EXTRUDING FIBRE OR KAPCORK®.
- ASPHALT BOARDS: TONGUE AND GROOVE JOINTS; DUMMY JOINTS.
- PRESSTITE® COLD POUR JOINT SEALER #67.
- PRESSTITE® COLD POUR JET AIRFIELD JOINT SEALER #99.
- KAPCO® HOT POUR ASPHALT-RUBBER JOINT SEALING COMPOUND.
- JETSEAL® HOT POUR JET AIRFIELD JOINT SEALER.
- KAPSEAL® CRACK FILLER.
- CONCRETE CURING COMPOUND.
- SUB-GRADE FELT . . . AND MANY, MANY MORE.

- **ONE COMPLETE BUYING SOURCE**
  No need to shop around when you can get all your wants in this giant supermarket of paving products. If you *use* it . . . we *have* it.
- **BIG SAVINGS IN MIXED-CARLOAD SHIPMENTS**
  Why carry a big inventory on low-need items? Stock only what you'll need—carry a more diversified stock—when you order under Presstite-Keystone's freight-saving "Mixed Carload Plan." Ask us about it.
- **ONE CONVENIENT INVENTORY & BILLING ACCOUNT**
  Less paper work, easier and faster handling, more net profits for you.
- **FAMOUS-NAME QUALITY**
  Two reliable names combine to bring you controlled quality, reliable delivery—and a personalized engineering service whenever you need it.

PRESSTITE Sealing Compounds — PRESSTITE-KEYSTONE ENGINEERING PRODUCTS COMPANY — KAP

A Division of AMERICAN-MARIETTA COMPANY
3784 CHOUTEAU AVENUE, ST. LOUIS 10, MISSOURI

Mexico City, Mexico, plans 500,000 metric ton annual capacity sugar refining plant and Mill. $3,500,000.

PUBLIC BUILDINGS

▲ **Calif., Mountainview**—SCHOOLS—Mountain View High School Dist., voted bonds new high school and expansion and renovation of 2 existing schools. $3,730,000.

▲ **Calif., Oakland**—HALL OF RECORDS—Alameda Co., 6 story, 200,000 sq. ft. concrete, steel Hall of Records. $5,200,000.

▲ **Calif., Riverside**—SCHOOL—Riverside School Dist., 3954 12 St., plans by Herman O. Ruhnow, Mission Inn Rotunda, Riverside, 85,000 sq. ft., brick, frame Arlington Junior High School, Arlington Ave. $2,000,000. CD 6/26/56.

▲ **Calif., San Bernardino**—SCHOOLS—San Bernardino Secondary School Dist., voted bonds high school, Junior High School, school addns. $4,450,000.

▲ **Calif., San Jose**—COLLEGE ADDNS.—State Div. Architecture, 1120, N. St., Sacramento, plans by Stone, Mulloy, Marracini & Patterson, 619 California St., San Francisco, health bldg. $1,176,000; arts building $1,816,000, both at San Jose State College for State Dpt. Educ. CD 7/24.

▲ **Ill., Oak Lawn**—SCHOOL—School Dist. 229, 94th and Southwest Hy., plans by Wm. J. Connor & Assocs., 164 E. 154th St., Harvey, 3 story, brick, 100,000 sq. ft. Oak Lawn High School addn., 95th and Southwest Hy. $1,000,000.

▲ **Iowa, Davenport**—SCHOOL—Bd. Educ., Community School Dist., J. E. Baumgartner, secy., plans by Louis C. Kingscott & Assocs., P.O. Box 202 and 321 W. Kimberly Rd., high school, West Locust St. and Waverly Rd. $4,400,000. Taking bids several months hence. CD 10/3.

▲ **Mass., Methuen**—SCHOOL—Town, Supt. Schools, 10 Ditson Pl., plans by Associated Architects & Engineers, 755 Boylston St., Boston, Junior High School. $1,800,000. CD 11/27.

▲ **Mich, East Lansing**—RESEARCH NUCLEAR REACTOR, etc.—State, A. N. Langius, dir. State Bldg., Lewis Cass Bldg., Lansing, research nuclear reactor. $2,000,000; ion accelarator, heavy duty, $1,200,000. Michigan State University.

▲ **Mich., Houghton**—MATHEMATICS, etc.—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mathematics-Physics Bldg. for Michigan College of Mining and Technology. $1,704,700.

▲ **Mich., Mount Pleasant**—SCIENCE—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, science bldg., Central Michigan College. $2,175,000.

▲ **Mo., Kirkwood (St. Louis 22 P.O.)**—SCHOOLS—Kirkwood School Dist. R-7, Alva L. Crow, supt. Schools, 516 S. Kirkwood Rd., Zone 22, voted $1,500,000 bonds Feb. 11, schools. CD 1/23.

▲ **N. J., Mount Holly**—HOSPITAL—Bd. Trustees Burlington Co. Hospital, Madison Ave., plans by Ellerbe & Co., E. First Natl. Bank Bldg., St. Paul, Minn., hospital addn. $5,455,000, under Commercial Bldgs.

▲ **N. Y., Brooklyn**—FEDERAL COURTHOUSE—General Services Admin., 18 and F Sts. N.W., Wash. 25, D.C., plans by Carson & Lundin, 425 Park Ave., New York, Zone 22, federal courthouse opposite post office, Washington St. $15,200,000. Lorimer Rich & Assocs., 35 W. 53 St., New York, Zone 19, engrs. CD 12/2/49.

▲ **N. Y., Cheektowaga**—SCHOOL—Maryvale School Dist., 1050 Maryvale Dr., bond election Mar. 15, elementary school. $1,450,000.

▲ **N. Y., Kings Park**—MEDICAL, SURGICAL—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, plans by Harry Prince, 101 Park Ave., New York, Zone 17, medical surgical bldg. at Kings Park Hospital. $6,000,000-$7,000,000. CD 12/1/54.

▲ **N. Y., White Plains**—SCHOOL—Bd. Educ., 279 Hamilton Ave., plans by Perkins & Will, 55 Church St., Senior High School. $7,500,000. Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, Zone 17, structural engrs. Jaros Baum & Bolles, 415 Lexington Ave., New York, Zone 17, mechanical engrs. CD 2/28/56.

▲ **O., Dayton**—JUVENILE CENTER—Comrs., Montgomery Co. Court House, plans by Lorenz & Williams, 2600 Far Hills, and Freeman Pretzinger, Reibold Bldg., both Dayton, Juvenile Court Center. $1,750,000. work to start July 1958. CD 11/11.

▲ **Tex., Port Arthur**—CIVIC CENTER—City, City Hall, civic center. $1,500,000.

▲ **Wash., Seattle**—MISSILE MASTER—U. S. Eng., 4735 E. Marginal Way, missile master. $1,000,000. Bids expected in May.

▲† **Alaska, Anchorage**—HOSPITAL—U. S. Public Health Service, 330 Independent Ave. SW., Wash., D. C., mental hospital. $6,500,000. Work may begin late this year.

▲ **Alaska, Juneau**—SCHOOL—Alaska P. Wks. Dpt. Interior, Anchorage, high school addn. $1,416,375. Work to begin late this year.

▲ **Newfoundland, St. John's**—HOUSING—Central Mortgage & Housing Corp., 357 Water St., low rental housing, Elizabeth Ave. and Whiteway St. $2,000,000; low rental housing, Central area of St. John's $675,000.

▲ **N. S., Sydney**—SCHOOL—City, City Hall plans by Downie, Baker & Ahern, 111 Inglis Ave., Halifax, high school. $1,000,000. Bids in March.

COMMERCIAL BUILDINGS

▲ **Calif., Los Angeles**—HOSPITAL—American Hospital Bldg. Corp., c/o Kegley, Westphall & Arbogast, archts., 800 S. Robertson Blvd., 3 story, 26,000 sq. ft. rein.-con. hospital, Sunset Blvd. and Vermont Ave. $1,000,000.

▲ **Calif., Santa Monica**—APARTMENTS—Raycord Corp., 450 N. Beverly Blvd., Beverly Hills, plans by Hudson & Hanson, 450 N. Beverly Blvd., Beverly Hills, 24 story apartments, 3 story garages, swimming pool, Ocean Ave., near Wilshire Blvd. $6,500,000.

▲ **Colo., Colorado Springs**—OFFICE—Farmers Insurance Group, 3500 N. Nevada Ave., plans by Ragnar-Benson, Inc., consult. engr.-archt., 4744 W. Rice St., Chicago, Ill., 35,000 sq. ft. office bldg. $1,000,000. CD 10/17.

▲ **Conn., Trumbull**—HOME FOR AGED—Diocese of Bridgeport, Chancery Office, 357 Washington Ave., Bridgeport, plans by J. Gerald Phelan, 211 State St., Bridgeport, Home for Aged, Main St., $1,000,000.

▲ **Iowa, Fort Dodge**—POST OFFICE, etc.—General Services Admin., 18 and F Sts., Wash., D. C., post office and court house, 3 Ave. So. between 8 and 9 Sts. (Lease-purchase) $1,980,000. CD 2/13/50, under Public Buildings.

▲ **Md., Bethesda**—SHOPPING CENTER—Rivermass Corp., 7000 Wisconsin Ave., Chevy Chase, plans by F. Leonard Slagle, 4630 Montgomery Ave., 170,000 sq. ft. shopping center, Westbard Rd. between River Rd. and Massachusetts Ave. $1,800,000.

▲ **Mich., Detroit**—CATHEDRAL CENTER—Episcopal Diocese of Michigan, 63 East Hancock, cathedral center, Woodward and Hancock. $1,500,000.

▲ **Mich., Detroit** — HOTEL — Owner, c/o Henry J. Abrams, archt., 800 Livernois, Ferndale, 5 story, 105 unit hotel, Edsel Ford Expresway and Woodward. $1,000,000.

▲ **Minn., St. Paul**—CLUB—St. Paul Athletic Club, L. E. Brown, mgr., 340 Cedar St., plans by Ellerbe & Co., E. 505 First National Bank Bldg., 7 story club bldg. addn., 340 Cedar St., and altering present bldg. $1,300,000.

▲ **N. J., Jersey City**—FACULTY HOME—St. Peter's College, 2641 Boulevard, faculty home, $1,600,000. Will probably ask for bids and start work in 1959.

▲ **N. J., Newark**—BOWLING ALLEY—Burton Assocs., Inc., 65 Chancellor Ave., combination bowling alley and bar, 34 Monteith Ave. $1,000,000.

▲ **N. Y., Brooklyn**—SCHOOL—Diocesan Bldg. Office, 191 Joralemon St., Zone 2, plans by William J. Boegel, 12 E. 48 St., New York, Zone 17, 2 story school, 9593 Fourth Ave. for Church of St. Patrick. $1,000,000.

▲ **N. Y., New York**—DORMITORY, etc.—Barnard College, Broadway and 119 St., plans by O'Connor & Kilham, 101 Park Ave., Zone 17, 9 story dormitory and 3 story student center, Broadway between 116 and 117 Sts. $2,000,000. CD 2/26/46.

▲ **N. Y., New York**—APARTMENT—Independence Terrace Corp., 1464 Jesup Ave., Zone 52, plans by Morris Rothstein & Son, 186 Joralemon St., Brooklyn, Zone 2, 6 story apartment, at Henry Hudson Bridge approach northwest corner of Palisades Ave. $1,000,000.

▲ **N. Y., New York**—APARTMENT—Isadore Rosen & Sons, 215 E. 204 St., Zone 58, plans by Melvin Kessler, 551 Fifth Ave., Zone 17, 6 story apartment, east side University Ave. between 181 and 182 Sts. $1,500,000.

▲ **O., Cincinnati**—SYNAGOGUE, etc.—Adath Israel Synagogue, Lexington and Reading Rd., school, recreational and religious structure, 5 acre tract, Summit and Edgemont Rd. $4,000,000.

▲ **O., Cleveland**—APARTMENT TYPE MOTEL—Skyline Developments, Inc., c/o Hugh A. Corrigan, Leader Bldg., Zone 14, plans by Snyder & Tekushan, 21670 Center Ridge Rd., Zone 16, 54 suite apartment-type motel, with swimming pool, coffee shop and play area, Berea Parkway between Brookpark and Rocky River Dr. $1,000,000.

▲ **O., Macedonia** — MOTOR HOTEL — Gilbert Lefton, Macedonia, plans by Koslen & Ross, 2163 Lee Rd., Cleveland, Zone 18, motor hotel, Routes 8 and 82 in Macedonia Twp., $1,225,000.

▲ **O., Olmsted Falls**—HOUSING—K & L Builders, Inc., 13985 Pleasant Valley Rd., Cleveland, Zone 30, plans by Andrew J. Burin, 21055 Lorain Ave., Cleveland, Zone 26, 200 homes, west side of Fitch Rd. between John and Cook Rds. $5,000,000. Will be built over a 5-year period.

▲ **O., Toledo**—DEPT. STORE—Sears, Roebuck & Co., S. State and Van Buren, Chicago, Ill., 2 story, 250,000 sq. ft. air-conditioned Dpt. Store, with parking low, on 12½ acre site, W. Central Ave., west of Secor Rd. $3,000,000.

▲ **R. I. Narragansett**—NOVITIATE—Christian Brothers, c/o William M. O'Rourke, 90 Union St., Warren, remodel Novitiate Bldg., site of former Barnes Newberry Estate on Ocean Rd. $1,000,000, Bids May-June 1958.

▲ **R. I., Providence**—DORMITORIES—Brown University, Barnaby C. Keeney, pres., Prospect St., plans by Perry, Shaw, Hepburn & Dean, 31 St. James Ave., Boston, Mass., 4 dormitories, Pembroke College. $1,500,000. Constr. 1958-59.

▲ **Tenn., Nashville**—OFFICE—Southern Builders, 3355 Poplar Ave., Memphis, 14 floor office, Capitol Hill Redevelopment, containing 500 car garage. $2,500,000-$3,000,000.

▲ **Tex., Austin**—APARTMENT HOTEL—American Guaranty Underwriter, 1010 Brazos St., apartment hotel. $1,500,000.

▲ **Tex., Houston**—BANK—National Bank of Commerce, 712 Main St., remodeling Bank of Commerce Bldg. $2,000,000.

▲ **Tex., Houston**—SHOPPING CITY—Bob Smith & Roy Hofheinz, 3918 Brandt St., plans by John Graham & Co., proj. archts., 146 5th St., Seattle, Wash. and 444 5th Ave., New York, N. Y. Phase 1, Regional Retail Shopping City, stores $50,000,000; Phase 2, recreation and entertainment shopping city bldgs. incl. medical center and theatre on Westheimer St., $18,000,000; Phase 3, constr. multi-story commercial bldgs. and luxury apartments on San Felipe St., $27,000,000.

▲ **Tex., San Antonio**—DWELLINGS—Owner, c/o DeVerne Kittles, archt.-consult. engrs., 523 W. Hildebrand Ave., 1678 Dwellings east of Hy. 281, $15,102,000.

▲ **Utah, Ogden**—HOSPITAL—Latter Day Saint's Church, 47 E. South Temple, Salt Lake City, Latter Day Saints Hospital, Harrison Blvd. between 39th and 40th Sts., on 27 acre tract. $5,000,000.

▲ **Wash., Renton**—HOMES—Renton Suburban Development Corp., Renton, 250 homes. $2,500,000.

▲ **Alaska, Anchorage**—HOUSING—Hickel Constr. Co., Anchorage, housing development in Turnagain-by-the-Sea area, $10,000,000. To be constructed over next 7 years.

▲ **Alta., Calgary**—OFFICE—Clair J. Cote Ltd., 41 Hollingsworth Bldg., plans by Abugov & Sunderland, 909-15th. S.W., 3 story, 27,650 sq. ft. structural steel frame, circular bldg., office bldg., Singer Towers, 4 St. W and 9th Ave. $1,000,000.

▲ **Man., Winnipeg**—SHOPPING CENTER—Owner, c/o Agents Ernst, Liddle & Wolf Ltd., 100 Paris Bldg., plans by Kurnarsky & Weinberg, 406 Montreal Trust Bldg., shopping center, 65x135 ft. supermarket, bank, stores, professional offices, medical clinic, etc. $1,000,000.

▲ **N. S., Yarmouth** — HOSPITAL — Hospitallers of St. Joseph, Yarmouth, hospital. $1,825,000. Constr. may start in spring. CD 8/21/56.

▲ **Ont., Toronto**—OFFICE—Tusca Investments Ltd., 55 Yonge St., plans by Peter Dickinson Assocs., 1910 Yonge St., 14 story structural steel frame, masonry, rein.-con. office bldg., King & Yonge Sts. $2,400,000.

▲ **Que., St. Therese**—HOUSING—Jardins Blainville, Ste. Therese, c/o Guy Blanchard & Robert Kunzli, Rosemere, housing, St. Therese, off Route 11. $2,000,000.

INDUSTRIAL BUILDINGS

▲ **Ill., Chicago**—FACTORY—Cook Chocolate Co., 4825 S. Rockwell St., plans by Lowenberg & Lowenberg, 111 W. Monroe St., 3 story, brick, factory addn. $1,000,000.

▲ **Iowa, Webster City**—POWER PLANT—City, C. C. McCarthy, mgr., City Hall, equipment and power plant addn. incl. 7500 KW turbine, boiler and auxiliaries, appurtenances, etc. $2,212,650. Stanley Eng. Co., Hershey Bldg., Muscatine, consult. engr.

▲ **Ky., Benchel**—PROCESSING PLANT—Falls Cities Co-operative Milk Producers Assn., 1051 E. Main, Louisville, plans by Norman Sweets, Republic Bldg., Louisville, Zone 2, dry milk processing plant, Benchel Bank Rd. $1,000,000.

▲ **N. J., Hammonton**—PLANT—Whitehall Laboratories Div. American Home Products Corp., Hammonton, 1 story approx. 100,000 sq. ft. pharmaceutical plant, on 100 acre site. $1,000,000.

▲ **W. Va., Apple Grove**—PLANT—Goodyear Tire & Rubber Co., 1144 Market St., Akron, O., 5 story approx. 100,000 sq. ft. floor space plant to make Videne, a polyester laminating film, on 300 acre eract, $9,000,000, Catalytic Constr. Co., 1528 Walnut St., Phila., Pa., engr. CD 2/18.

▲ **Wyo., Kemmerer**—PLANT—Utah Power & Light Co., E. M. Naughton, pres., Kearns Bldg., Salt Lake City 10, Utah, 150,000 kw. steam power plant. $34,000,000, Bids in 1958.

▲ **Ont., Temiskaming**—MILL IMPRVS.—Canadian International Paper Co., Temiskaming, Kipawa Mill Imprvs. $1,000,000.

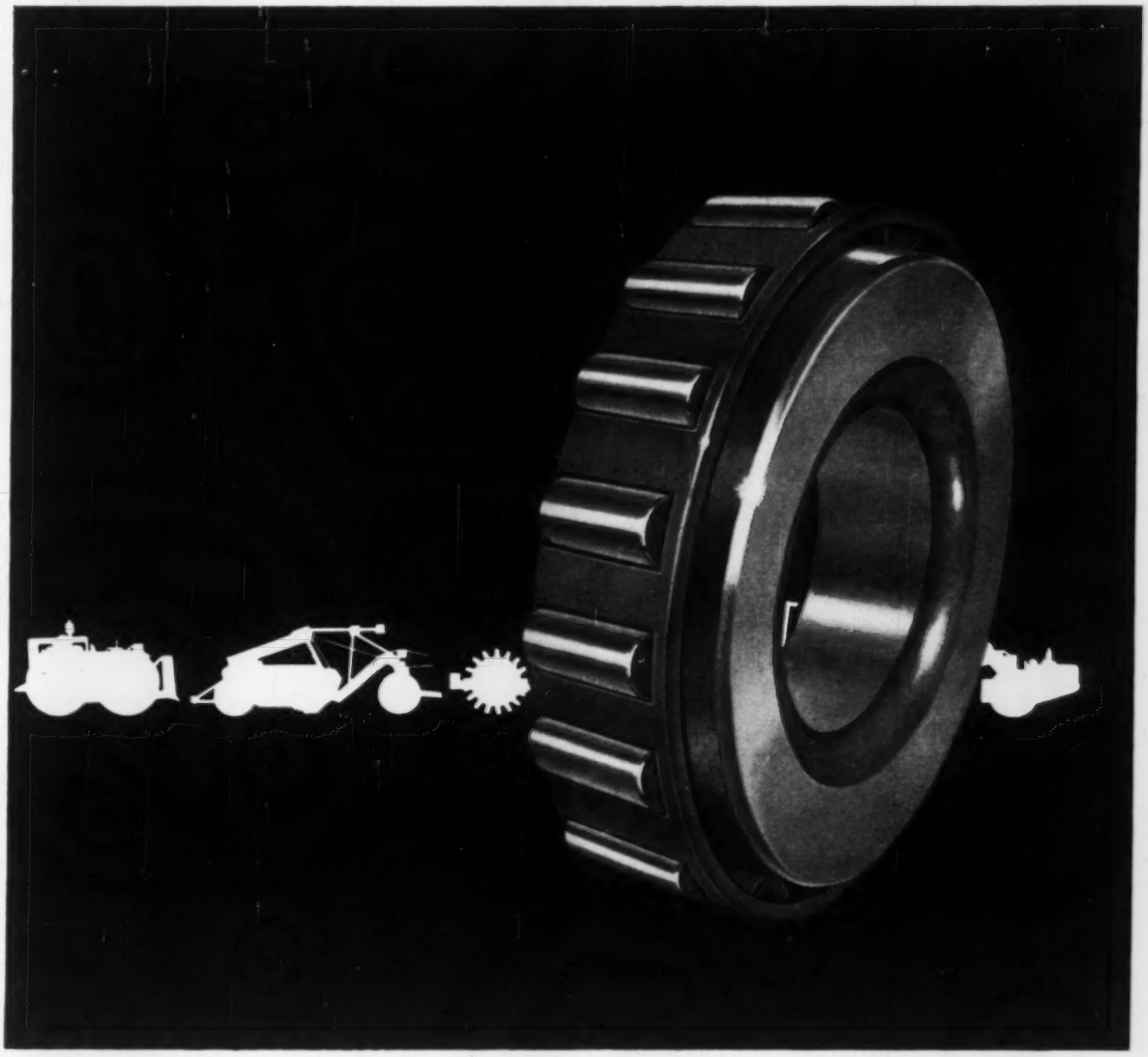
UNCLASSIFIED

▲ **Calif., Long Beach**—NAVY LANDING—City, Long Beach City Council, City Hall, plans by Adams, Morgan, Latham, Kripp & Wright, archts.-consult. engrs., 3633 Long Beach Blvd., 30,000 sq. ft. Type I constr. navy landing on Magnolia Ave. Long Beach Cont. shore patrol facilities, waiting rooms, offices and restaurant. $1,900,000.

▲ **N. Y., New York**—SHIPPING TERMINAL—Dpt. Marine & Aviation, Pier A, North River, Zone 4, Proj. No. D-9, shipping terminal, Pier 26, North River, foot of Beach St. $2,000,000. Parsons, Brinckerhoff, Hall & MacDonald, 51 Broadway, Zone 6, engrs. CD 2/15/45.

▲ **Tex., Houston**—UNDERGROUND UTILITIES, etc.—Bob Smith & Roy Hofheinz, 3918 Brandt St., underground utilities $400,000; lighting sys. (outside) for 110 acre Shopping City zone $175,000; constr. heated and air-conditioned mall $750,000; central heating and air-conditioning sys. $1,500,000, all in Regional Shopping City Zone.

▲ **Alberta**—TRANSMISSION LINE—Canadian Utilities Ltd., 10529 Jasper Ave., Edmonton, 65 mi. transmission line, 35 mi. Vermilion to Vegreville, Vermilion to St. Paul, 69,000 volts. $2,600,000. CD 6/20/50.



one grease assures quality, convenience, economy

The performance of Esso Multi-Purpose Grease H equals or excels that of many "special-purpose" greases in all types of equipment—in such points as spring shackles, wheel bearings, track rollers, universal joints, steering linkages, water pumps. This has been proved by contractors in all phases of construction work.

Esso Multi-Purpose Grease H takes the severest punishment encountered by hard-working earth-moving and construction equipment. It *maintains* a highly effective protective seal around exposed bearings preventing contamination by water, mud, dust and dirt.

And Esso Multi-Purpose Grease H offers great cost-cutting advantages in handling and inventory since it takes the place of three or more greases. On-the-site applications are quicker and simpler. What's more, there's never the danger of using the wrong grease and causing costly damage and down-time.

For specifics on how Esso Multi-Purpose Grease H can bring big savings to your operations, call our nearest Esso Office. Esso products and services are available through Esso Standard Oil Company plants and offices in more than 400 cities and towns throughout New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, W. Virginia, the Carolinas, Tennessee, Arkansas, Louisiana and the District of Columbia.

PERFECTED BY RESEARCH

MULTI-PURPOSE GREASE H

Esso

PROVED IN PERFORMANCE

Bids—Low Bids—Contracts—Second Section

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 14 Pennsylvania March 18 Maryland

STREETS AND ROADS

March 14 Pennsylvania

BUILDINGS—BA

▲ **Pa., Abington**—DEPARTMENT STORE, etc.—BA 3/18—The Ballinger Co., archts.-engrs., 1625 Race St., Phila., department store, service station and parking area, for Sears Roebuck Co., Adams Ave. and Roosevelt Blvd., Phila. $2,500,000. CD 10/17.

▲ **N. Y., New York** — SCHOOL — BA 3/26 — Bureau Constr. Bd. Educ., 42-55 Crescent St., Long Island City, Zone 1, general constr., plumbing, drainage, kitchen and cafeteria equip., heating, ventilating, electrical work, lighting fixtures, electric passenger elevator and escalators, High School of Industrial Arts and P. S. 59 at west side of Second Ave. between 56 and 57 Sts., Manhattan Boro. Extended date. $6,583,600. Plans deposit $50, 20, plumbing, $15 each. heating, electrical trades, $10 elevator. CD 1/24.

HEAVY CONSTRUCTION—BA

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg, Bids opened 2/21,

Adam Eidemiller, Inc., R.D. 4, Greensburg, Pa. LB $3,296,243 (7 bidders) conversion 82,645 ft. existing divided hy. to limited access constr. parallel roads, 10 bridges, T.R. 31, Washington, Fayette, and Westmoreland Counties. CD 1/30.

BUILDINGS—LB & CA

▲ **Driscoll-Moccia Constr. Co.,** 41 E. 42 St., New York 17, N. Y., CA $12,088,575, general contract Proj. NYS-73, Bushwick Houses, incl. 1,220 APARTMENTS, Moore St., Bushwick Ave., Flushing Ave. and Humboldt St., Proj. NYC-33 (city) John F. Hylan Houses, incl. 206 APARTMENTS, Seigle St., Bushwick Ave., Moore St. and Humboldt St., BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Grand total $15,399,899. Bids Feb. 4. CD 2/6, under LB.

H. Sand & Co., 11 Park Place, New York 7, N. Y., CA $818,200, heating for Proj. NYS-73, Bushwick Houses (Brooklyn, N. Y.).

Spitzer Elec. Co., 420 Lexington Ave., New York 17, N. Y., CA $999,900, electrical work for Bushwick and Hylan Houses (Brooklyn, N. Y.);

Fein-Schlosberg, Inc., 1770 Second Ave., New York 26, N. Y., CA $1,098,000, plumbing for Bushwick Houses (Brooklyn, N. Y.);

Armor Elev. Co., 35-45 35th St., Long Island City, N. Y., CA $395,224, elevators for Bushwick Houses (Brooklyn, N. Y.).

▲ **Leon D. DeMatteis Constr. Co.,** 827 Elmont Rd., Elmont, N. Y., CA Est. $4,597,000, Ernest E. Eldred SENIOR HIGH SCHOOL, on former Cedarhurst Stadium site on Peninsula Blvd., LAWRENCE, N. Y. Union Free School Dist. No. 15, Lawrence, N. Y. Frederic P. Widersum Assocs., 65 Roosevelt Ave., Valley Stream, N. Y., archts.

▲ **M. G. W. Inc.,** c/o Samuel Park, archt., 89-51 164th St., Jamaica, Owner Builds, $2,100,000, two 9 story APARTMENTS, Fieldstone Rd., southeast corner of 256 St., NEW YORK, N. Y. CD 10/4.

▲ **Depot Constr. Corp.,** 42-15 Crescent St., Long Island City, N. Y., LB $2,515,000 (12 bidders), Contr. No. 1055K1, general constr. County Welfare HOME, Jerusalem Ave., UNIONDALE, Town of Hempstead, N. Y. Nassau Co. Executive, Nassau Co., Old County Court House, Mineola, N. Y. Bids Feb. 25. CD 1/17;

Machanical Installations, Inc., 24-16 Bridge Plaza South, Long Island City, N. Y., LB $363,000 (12 bidders), heating and ventilating (Uniondale, N. Y.);

ARC Electrical Constr. Co., Inc., 739 Second Ave., New York 16, N. Y., LB $368,000 (15 bidders), electrical (Uniondale, N. Y.)

▲ **Hamilton Park Homes,** c/o Samuel Hanken, P.O. Box 3063, Mercerville, N. J., Separate Contracts. $5,400,000. 360 unit RESIDENTIAL DEVELOPMENT, MERCERVILLE, N. J. Erwin Gerber, 1180 Raymond Blvd., Newark, N. J., archt.

▲ **Chmil Bros.,** Rte. 22, RD No. 2, Somerville, N. J. Owner Builds, $2,000,000, 78 HOUSES, Adamsville Road, Bridgewater Twp., SOMERVILLE, N. J. Robert Baker, Amboy Ave., Metuchen, N. J., archt.

▲ **Silvino Di Mascio,** 5 E. Golf Club Lane, Paoli, Pa. Separate Contracts. $1,500,000, RESIDENTIAL DEVELOPMENT (80) Rte. 23, Schuylkill Twp., PHOENIXVILLE, PA.

▲ **Kirby & Maguire, Inc.,** 2518 Greenmount Ave., Baltimore, Md. LB $1,936,188 (combination bid) (14 bidders), four POLICE STATIONS, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Feb. 26. CD 2/13.

▲† **Iron & Reynolds, Inc.,** 1724 H St. N.W., Wash., D. C. LB $2,828,000, (7 bidders) AUDITORIUM FINE ARTS BLDG. (except elevators) Howard University, WASH., D. C. General Service Admin., Public Bldg., Service Room 1304, 19th and F Sts. N.W., Wash., D. C. Robinson & Williams, 1927 11th St. N.W., Wash., D. C., archts. Bids Feb. 25. CD 2/25/58.

▲ **Wark & Co.,** 1920 Sansom St., Phila., Pa., CA $2,000,000, CLUB HOUSE addn., STANTON, DEL. Delaware Park Racing Assocs., Stanton, Del. W. Ellis Preston, 903 Jefferson St., Wilmington, Del., archt.

SOUTH

BUILDINGS—BA

▲† **Ga., Macon**—HOUSING—BA 3/20—Base Procurement Office at Civilian Employees Club, Bldg. 1683, Dormitory Area, City of Warner Robbins, Ga., 273 Family Housing units Armed Services Housing Proj. Robbins Air Force Base, Nr-09-6-3-58-77. CD 2/14.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dept. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond,

Va.—**Wilmoth Paving Co.,** 1st and P Sts. SE Wash., D. C., CA $926,300 b. conc. 5.14 mi. Rte 236 beginning at 0.23 mi. W. Int. Rte 244 (Annandale) and ending at Int. Rte 237 (Fairfax) State Proj. 0236-029-007-008. Fed. Proj. F-014-1 (4) Fairfax Co.;

Va.—**Burkholder & Burkholder,** 1025 Connecticut Ave. N.W., Wash., D. C., CA $516,477 grading, draining, 2.27 mi. Rte 413 beginning at Rte 617 (Back Lick Rd.) and ending at 0.12 mi. N. Rte 620 (Braddock Rd) State Proj. 0413-029-006, Fed. Proj. I-213-1 (5) Fairfax Co., FAI;

Va.—**L. A. Reynolds & Co.,** 1100 W. 1st St., Winston-Salem, N. C. and **Barnhill & Long, Inc.,** Box 725, Tarboro, N. C. CA $1,636,503 grading, draining, bridge and approaches 2.41 mi. Rte 413 beginning at 0.15 mi. N. Rte 620 (Braddock Rd.) and ending 0.85 mi. N. Rte 236 (Lee Jackson Hy.) State Proj. 0413-029-006-G-4. Fed. Proj. I-213-1 (5) Fairfax Co., FAI;

Va.—**Wright Contg. Co., Inc.,** Box 1537, Columbus, Ga. CA $4,014,653 b. conc. 5.69 mi. and b. conc. 0.98 mi. and 9 bridges Rte 81; 33 (402) beginning at 2.05 mi. S. Prop. Rte 33-3.60 mi. Prop. Rte 33 and ECL Harrisonburg, Fed. Proj. I-202-3 (2) Rockingham Co., FAI;

Va.—**Blythe Bros. Co., Inc.,** 2911 Hutchinson Ave., Charlotte, N. C. CA $2,386,453 b. conc. and 4 bridges 5.39 mi. Rte 95 (401) beginning at 0.73 mi. S. Int. Rte 35 and ending at 0.5 mi. S. Int. Rte 626 State Proj. 0095-074-001,003-005-00-011. Fed. Proj. I-201-1 (3) (11R/W) Prince George Co., FAI. Grand total $9,480,386. Bids Feb. 19. CD 2/26, under LB.

▲ **NORTH CAROLINA**—State Hy. Comn., Raleigh

N. C.—**A. B. Burton Co., Inc.,** Box 817, Lynchburg, Va. **James T. Triplett, Inc.,** Chester, S. C., **F.A. Triplett, Inc.,** Chester, S. C., CA $2,298,372, Proj. 8.17478, 1-35 (13) 1-401 (15) U-401 (14) grading, structures, 3.15 mi. US 158, ext. to Winston-Salem Expressway from South Main St., East to Intersection of US 158 and 421, Forsyth Co.;

N. C.—**Blythe Bros. Co.,** Box 989, Charlotte 1, N. C. CA $1,086,596, Contr. 8.15416, 1-644 (16), grading, structures, 11.26 mi. US 70 addnl. lane on U.S. 70 betw. Greensboro and N.C. 61, Guilford Co. Bids Jan. 28, awarded Feb. 21. CD 1/10.

BUILDINGS—LB & CA

▲ **W. H. Weaver Constr. Co.,** 216 W. Gaston, Greensboro, N. C. LB $1,716,000. 236 DWELLING UNITS, ADMINISTRATION and MAINTENANCE BLDG., Housing Project N.C. 11-3, GREENSBORO, N. C. Greensboro Housing Auth., City Hall, Greensboro, N. C. Bids Feb. 19. CD 1/23.

▲ **Henry C. Beck & Utah Constr. Co.,** Fulton National Bank, Atlanta, Ga. (joint venture). LB $8,790,000. (10 bidders), constr. COMMUNICABLE DISEASE CENTER (lease-purchase proj) for Public Health Service, ATLANTA, GA. General Services Admin. P. Bldg., Wash., D. C. Bids Feb. 25. CD 2/25.

▲ **C. F. Braun & Co.,** 1000 S. Fremont Ave., Alhambra, Calif. CA Est. $5,000,000. design and construct SODIUM CHLORATE PLANT, ABERDEEN, MISS. American Potash & Chemical Corp., W. 6 St. and Westmoreland Sts., Los Angeles, Calif. CD 3/1/57.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 19 Michigan

STREETS AND ROADS

March 18 Michigan, Ohio

▲ **Ill., Chicago**—BA 3/14—City, furnishing, del. fabricated structural steel for NW Route Superhighway Grade Separation, Wabansia Ave. to Cortland St. over Ashland Ave. $1,800,000. CD 6/10.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt. Columbus, Zone 15,

cancelled bids to have been opened Feb. 18, Proj. SR 128 (6.06-8.51) S.-US-763 (2) Type T.-71, 2.471 mi., Butler Co., LB $2,314,100; Proj. SR 45-(18.80-19.04) F.-FG 576 (6) Type T-71 and structures 1.76 mi., Columbina Co. CD 1/31/58.

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15, Bids opened Feb. 18,

O.—**Harrison Constr. Co.,** 1101 Western Ave., Pittsburgh, Pa., LB $3,856,043, est. $4,178,400 (10 bidders) Proj. SR 1-25.18, AC1-1103 (24) (Village of Lakeville), Type T-71 and structures, 5.044 mi., Ashtabula Co.;

O.—**The De Salvo Constr. Co.,** 3701 Red Bank Rd., Cincinnati, O., LB $1,912,800, est. $2,314,100 (10 bidders) Proj. SR 4-24.45, 0.00 (SR 123 and 725), F.-FG-825 (5), (Village of Germantown) Type T-35 on B.-119 and structures, 8.300 mi., Butler and Montgomery Counties;

O.—**The Heffner Constr. Co.,** 509 N. Main St., Celina, O., LB $2,973,521, est. $3,265,900 (9 bidders) Proj. USR 62-2.12, ACI-609 (10), 576 (6), Type T-71 and structures, 1.76 mi. Franklin Co.;

O.—**Bruns Coal Co., Inc.,** P.O. Box 991, Zanesville, O., LB $2,554,038, est. $2,807,200 (8 bidders) Proj. USR 52 (& SR 650)-301, F.-FG-U-393 (7) (City of Ironton) (Village of Hanging Rock), Type T-71 and structures, 3.554 mi., Lawrence Co.;

O.—**Falbo Constr. Co., Inc.,** 925 Coronado Ave., Lorain, O., LB $369,653, est. $441,000 (5 bidders) Proj. CR No. 51 (and USR No. 6) S.-1251 (1) Type T-71, 1.411 mi., Lorain Co.;

O.—**A. J. Baltes, Inc.,** 11 Olive St., Norwalk, O., LB $5,951,731, est. $6,163,200 (10 bidders) Proj. SR 1-5.66, AC1-1105 (24) Type T-71 and structures, 6.887 mi., Medina Co. CD 1/31.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, Bids opened 2/25,

Ill.—**General Paving Co.,** 30 E. John, Champaign, Ill., LB $2,066,143 (4 bidders) 4 lane 4.96 mi. conc. paving, FA 1-5 near St. Joseph, Champaign Co.; LB $173,167 (8 bidders) wid'n. 3.03 mi. US 51 from Ill. 119 in Heyworth, southerly, DeWitt and McLean Counties;

Ill.—**E. T. Simonds Constr. Co.,** Carbondale, Ill., LB $757,777 (1 bidder) concrete paving 2.89 mi. F.A. 14 Crainville Rd. to Ill. 148, Williamson Co.; LB $385,425 (2 bidders) concrete paving 1.64 mi. Ill. 34 from East of Benton S.E. on SBI 143, Franklin Co.;

Ill.—**Rein & Schultz, Inc.,** 119 E. Wash. Ave., Madison, Wis., LB $104,651 (4 bidders) resurf. 8.5 mi. US 20 bet. Ill. 73 and Freeport, Stephenson Co.; LB $122,054 (4 bidders) resurf. 9.64 mi. Ill. 73 from State line to US 20, Stephenson Co.;

Ill.—**Sangamo Constr. Co.,** 700 N. MacArthur, Springfield, Ill., LB $143,853 (2 bidders) resurf. 9.15 mi. Ill. 29 Cantrall to Springfield, Sangamon Co.; LB $108,032 (4 bidders) wid'n. 10.49 mi. SB 78 Bath to Chandleville, Mason and Cass Counties;

Ill.—**Seneca Petroleum Co.,** 439 W. 33rd, Chicago, Ill., LB $170,384 (2 bidders) concrete resurf. 10.96 mi. US 150 east of Kickapoo, Peoria Co.; LN $222,417, (3 bidders), resurf. 14.23 mi. Ill. 121, Logan Co.;

Ill.—**Champaign Asphalt Co.,** 31 E. Bradely, Champaign, Ill., LB $245,907, (2 bidders), b. conc. resurf. 10.98 mi. US 150 east of Urbana, Champaign Co.; LB $290,035, resurf. 0.8 mi. US 45 in Urbana on SB1-Rt 5 inter (combination), Champaign Co.;

Ill.—**Berenz & Son Asphalt,** 500 E. Bell, Bloomington, Ill., LB $102,468, (3 bidders), b. conc. resurf. 3.34 mi. US 51 from Ill. 119 Heyworth So., DeWitt and McLean Counties;

Ill.—**Bituminous Fuel Co.,** First Natl Bank, St. Louis, Ill., LB $522,451, (3 bidders), resurf. and patching 33.62 mi. various routes, Randolph and Perry Counties;

Ill.—**Bridges Paving Co.,** 1337 So. Kingshighway, St. Louis, Mo., LB $334,380, (3 bidders), wid'n., resurf. 5.35 mi. Ill. 37 Alma to Salem, Marion Co.;

Ill.—**Coggeshall Const. Co.,** Clayton, Ill., LB $133,650, (2 bidders), b. conc. resurf. 7.18 mi., Kingston and Chambersburg, Adams and Pike Counties;

Ill.—**Crown Rock Asphalt Co.,** 178 Addison Ave., Joliet, Ill., LB $148,934, (3 bidders), patching, resurf. 11.1 mi. US 52 bet. Ill. 49 & Ill. 59, Dist. 3;

Ill.—**Dale Denny Constr. Co.,** Anna, Ill., LB $254,257, (2 bidders), bit. surf. treatment 3.33 mi. McClure southerly on FH Rte 13, Alexander Co.;

Ill.—**Franklin Asphalt Co.,** Benton, Ill., LB $117,459, (1 bidder), bit. surf. treatment 18.13 in 7 counties, Dist. 9;

Ill.—**Gim. Paving, Inc.,** Moose Bldg., Quincy, Ill., LB $262,067, (4 bidders), wid'n. 6.71 mi. US 36 bet. Hull and E. Hannibal (combination), Pike Co.;

Ill.—**Geo. E. Hoffman & Sons,** 94 S. Sanger St., Peoria, Ill., LB $120,145, (3 bidders), resurf. Ill. 116 in and near Peoria, Peoria Co.;

Ill.—**Howell Asphalt Co.,** Mattoon, Ill., LB $599,815, (4 bidders), resurfing 50 mi. Ill 32, 33 and 130, Dist. 7;

Ill.—**Jefferson Asphalt Co.,** Mt. Vernor, Ill., LB $534,418, (7 bidders), bit. resurf. US 45 to US 50 near Flora, Dist. 7;

Ill.—**Keeley Bros. Constr. Co.,** 4211 State, E. St. Louis, Ill., LB $96,083, (3 bidders), resurf. Ill. 3 Venice to Brooklyn, Madison and St. Clair Counties;

Ill.—**Litchfield Bit. Corp.,** Hillsboro, Ill. LB $290,490, (7 bidders), bit. surf. treatment 4.57 mi. FAS1738 Chesterfield, west, Macoupin Co.;

Ill.—**McDougal-Hartman,** 3101 N. Adams, Peoria, Ill., LB $866,249, (4 bidders), wid'n. resurf. 8.39 mi. SBI-Rte 2 US 51 in Normal, McLean Co.;

Ill.—**Powers-Thompson Co.,** 27 S. Chicago, Joliet, Ill., LB $1,682,210, (12 bidders) concrete paving 6.25 mi. 4 lane FA 1-6 from Ill. 47 west, Grundy Co.;

Ill.—**Rein & Dahl Inc.,** Stoughton, Wisc., LB $189,914, (2 bidders), bit. surf. 10.08 mi. FA S Rt. 78 from Milledgeville east, Carroll Co.;

Ill.—**Rockford Black Top Co.,** 1615 Westchester, Rockford, Ill., LB $293,849, (3 bidders), b. conc. resurf. 12.98 mi. Ill. 64 Oregon to US 51, Ogle Co.;

Ill.—**Sanken Bros., Inc.,** Illinois Bldg., Springfield, Ill., LB $230,842, (4 bidders), bit. resurf. 10.82 mi. Ill. 78 Bath to Chanderville, Mason and Cass Counties;

Ill.—**Triangle Constr. Co.,** 480 N. Evergreen, Kankakee, Ill., LB $733,925, (2 bidders), wid'n. 5.13 mi.

US 45 Carrier Mills to Stonefort, Saline and Williamson Counties;

Ill.—**J. P. Wetherby Constr. Co.**, Ottawa, Ill., LB **$242,415,** (4 bidders), Dist. 3 patching and resurf. on SBI-69 & 23, LaSalle and Kendall Counties;

Ill.—**Ceplias Williams Co.**, 914 E. Main, Streaton, Ill., LB **$346,180,** (4 bidders), b. conc. resurf. 24.44 mi. on Ill. 23 bet. Streaton and US 66 at Pontiac, Livingston Co.;

Ill.—**R. B. Potashnick & Regenhardt Co.**, Cape Girardeau, Mo., LB **$520,876,** (2 bidders), paving 2.16 mi. FA Rte. 185 north of Mount Vernon, Jefferson Co. CD 2/12.

▲ **W. J. Sheppard & Co.**, 1412 Altgeld St., Chicago, Ill., CA **$2,083,531,** grading, paving NW Route Superhighway from W. Madison St. to W. Fulton, CHICAGO, ILL., City, City Hall, Chicago, Ill. Bids 1/30. CD 2/7.

BUILDINGS—LB & CA

▲ **Frank Messer & Sons, Inc.**, 4612 Paddock Rd., Cincinnati, O., CA total est. **$5,000,000,** constr. Winton Hill TECHNICAL CENTER, CINCINNATI, O. Procter & Gamble Co., Gwynne Bldg., Cincinnati, O. CD 9/11.

▲ **Knowlton Constr. Co.**, 1133 Columbus Ave., Bellfontaine, O., CA **$1,845,400,** general contract Phase 2, MEDIUM SECURITY PRISON, near LEBANON, O. Ohio Dept. P. Wks., State Dpt. Bldg., Columbus, O. Bids Dec. 19, awarded Feb. 10. CD 12/24, under LB.

▲ **A. Siegler & Sons,** 5117 Lee Rd., Maple Heights, O. and **Zehman-Wolfe & Sherman,** 13484 Cedar Rd., Cleveland 18, O., LB Est. **$2,000,000,** 3 story, masonry, constr. with stone trim, fully air-conditioned MEDICAL ARTS CENTER, MAPLE HEIGHTS, O. Southgate Stores, Inc., 5117 Lee Rd., Maple Heights, O. Hart & Weiss, 12728 Woodland Rd., Cleveland 20, O., archts. CD 4/22/52.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 14 Minnesota — March 18, 19 Texas

STREETS AND ROADS

March 14 Minnesota — March 18, 19 Texas

HEAVY CONSTRUCTION—LB & CA

▲ **Pipe Line Service Co.**, Seminole, Okla., CA **$1,600,000,** 78 mi. 12 in. products line from Ponca City to Tulsa, Kay and Tulsa Counties, OKLAHOMA. Cherokee Pipe Line Co., (subsidiary of Cities Service Co. & Continental Oil Co.) Ponca City, Okla. CD 1/16.

BUILDINGS—LB & CA

▲ **Foster Wheeler Corp.**, 666 5th Ave., New York 19, N. Y., CA steam generators for 4th unit Meramac POWER PLANT, ST. LOUIS, MO. Union Electric Co. 315 N. 12th Blvd., St. Louis, Mo.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 18 Washington — March 26 California

STREETS AND ROADS

March 18 Washington — March 26, 27 California

▲† **Calif., Point Mugu**—REGULUS 11 FACILITIES—BA 4/29—Pub. Wks. Officer, Eleventh Naval Dist., San Diego, constr. Regulus 11 Facilities at Naval Air Missile Test Center, $1,500,000. CD 9/17.

BUILDINGS—BA

▲ **Calif., San Francisco**—OFFICE and HOTEL—BA 3/20—Jack Tarr Hotel, Charles A. Sammons, 6 St. and Boulevard, Galveston, Tex., 5 story hotel and 9 story office bldg., 10,000 sq. ft. each floor, 2 floors for parking underground, swimming pool, steel and concrete framing. $8,000,000. Extended date. Hertzka & Knowles, 85 Post St., and Thomas M. Price, 1227 Ave. L, Galveston, Tex., archts. CD 2/5.

HEAVY CONSTRUCTION—LB & CA

▲† **Gordon H. Ball,** 300 Camille Ave., Danville, Calif. CA **$1,588,612** apron stub parking and facilities and apron, operational and hydrant fueling sys. at Mather Air Force Base, ENG-04-167, 58-14, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Feb. 20, awarded Feb. 24. CD 2/25, under LB.

BUILDINGS—LB & CA

▲ **Rosenloff Constr., Max Rosenloff,** 526 S. Idaho Ave., Provo, Utah, CA **$1,694,400,** est. $1,600,000, Lehi HIGH SCHOOL, 400 E. and Main St., AMERICAN FORK, UTAH. Alpine School Dist., Frank Jex, dir., Maintenance and Operation, American Fork, Utah. Bids Feb. 17. CD 2/24, under LB.

▲ **Pacific Coast Builders,** 1 South Park, San Francisco, Calif., LB **$2,186,600** (9 bidders) Cherryland HIGH SCHOOL, incl. gym, site development, tennis courts, football and baseball field, HAYWARD, CALIF. Hayward Union High School Dist., 22300 Foothill Blvd., Hayward, Calif. Bids Feb. 19. CD 1/15.

▲ **W. Douglas Lee & D. Everett Lee,** 401 S. Rossmore St., Los Angeles, Calif. Owner Builds. **$10,000,000,** 21 story OFFICE, Wilshire Blvd., Lee Tower, LOS ANGELES, CALIF. W. Douglas Lee & D. Everett Lee, 401 S. Rossmore St., Los Angeles, Calif., archts. Brandow & Johnson, 2430 W. 3 St., Los Angeles, Calif., structural engrs.

▲ **C. L. Peck,** 816 W. 5th St., Los Angeles, Calif. CA **$8,500,000,** total cost $13,000,000, 15 story 200,000 sq. ft., 273 ft. high granite, stone facing steel framing Q cell sys., 3 basement floors for parking OFFICE BLDG., LOS ANGELES, CALIF. California Bank, 625 S. Spring St. (Spring St. Realty Co.) Los Angeles, Calif. Bids Dec. 19. CD 12/24, under LB, under Spring St. Realty Co. as owner.

▲ **The Robert E. McKee Co.**, 4700 San Fernando Rd., West Los Angeles, Calif. LB **$13,308,000** (3 bidders) 25 story, 3 bsmnts., 850,000 sq. ft., rein.-con. Kaiser Center OFFICE BLDG., 2036 Webster St., OAKLAND, CALIF. Henry J. Kaiser, 1924 Webster St., Oakland, Calif. Bids Feb. 21. CD 1/28.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 28 New Brunswick — April 2 British Columbia

STREETS AND ROADS

March 20 Alberta

BUILDINGS—LB & CA

▲ **Anglin-Norcross Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., CA Est. **$10,000,000** (6 bidders) 2 story limestone, granite and glass base, sculptural form roof sheathed in bronze and granite, stage tower 100 ft. high limestone slab, AUDITORIUM on 2½ acre, Yonge and Front Sts., TORONTO, ONT. O'Keefe Center, 297 Victoria St., Toronto, Ont. M. S. Yolles & Assocs., 111 Richmond St. W., Toronto, Ont., engrs. Bids Jan. 8, awarded Feb. 24. CD 12/9.

▲ **Skopit Assocs. Co. Ltd.**, 4869 Yonge St., Willowdale, Toronto suburb, Ont., Owner Builds, **$8,000,000,** 1 story, and semi-detached types with concrete block fdns., brick constr., 496-low cost homes, HOUSING DEVELOPMENT, Jane St., TORONTO, ONT. Constr. underway.

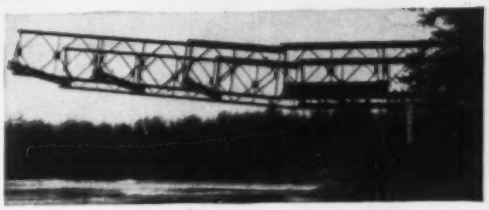
▲ **Head Constr. & Supply Co. Ltd.**, 635 Tecumseh St. W., Windsor, Ont., LB **$1,585,000,** (5 bidders) 203-unit HOUSING, Federal-Provincial low-rental project, WINDSOR, ONT. Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto, Ont., and Ontario Dpt. Planning & Development, Parliament Bldgs., Toronto, Ont. Bids Feb. 13. CD 2/3.

▲ **G. Daneau,** 13000 Notre Dame St. E., Pointe aux Trembles, Montreal, Que., CA Est. **$1,739,250,** 10 APARTMENTS, MONTREAL, QUE. St. George Gardens Ltd., 13000 Notre Dame St. E., Pointe aux Trembles, Montreal suburb, Que. Awarded Feb. 20.

ALL IN A DAY'S WORK

9.00 a.m. Arrive site with Bailey Bridge units in standard trucks. Illustration shows Bailey Bridge units being assembled by unskilled labor. Completed by 12 noon.

3.00 p.m. Bridge launched. Simple launching system cuts equipment costs.



6.00 p.m. Timber decking laid and open to traffic. Traffic rolls within hours.

Bailey **BRIDGE ERECTED IN 8 HOURS**

Construction is speeded under all conditions with the versatile Bailey Bridge. Special features include:

- **Practically 100% salvageable.**
- **Low costing**
- **Deck-type or Thru-Truss construction**
- **Chord-reinforcement for increased capacity without relative increase in weight.**

U. S. REPRESENTATIVES

Timberland Machines Inc.
169 Front Street,
South Portland, Maine

Mason and Bacon Inc.
McClure Building,
Frankfort, Kentucky

Bailey Bridge Co.
1767 Conejo Avenue,
San Luis Obispo, California

Available immediately from stock

Telephone or write for illustrated literature

CONTRACTORS SERVICE LIMITED

38 COMMERCIAL ROAD — **TORONTO, ONT.**

Telephone MA 4424

Sole Distributors for Bailey Bridging in U.S.A. and Canada

WORLD LICENCEES FOR MANUFACTURE AND SALE

THOS. STOREY (ENGINEERS) LTD., STOCKPORT, ENGLAND

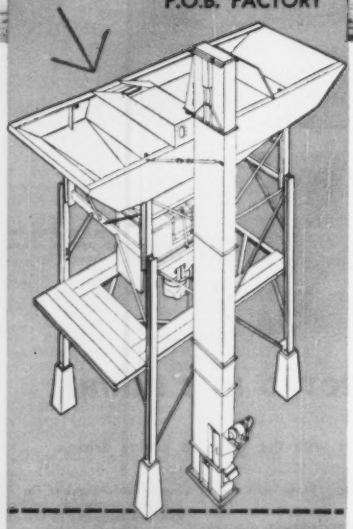
NEW Johnson® ECONOPLANT®

with cement weighed on a separate scale

IT'S YOURS FOR APPROX.

$10,000

F.O.B. FACTORY



At a minimum investment you can now get a high-quality transit-mix plant that meets strict specifications on paving, structural concrete jobs, or on commercial ready-mix operations. This low-cost Johnson Econoplant has all-welded 55-cubic yard bin with 3 aggregate compartments (tot. 45 cu. yds.) and a 70-bbl. cement compartment, complete with low-pressure aeration system. 180-bbl.-an-hour cement bucket elevator has 3 h.p. gearmotor with roller-chain drive, and boot hopper for bulk or bag cement.

Meets rigid specifications

One of the big *plus* values of this Econoplant is *separate weighing of cement* to comply with exacting requirements for specification concrete. Included in the low price is Johnson's 3 cubic yard Concentric aggregate-cement batcher, manually-operated. It weighs the cement on an *independent* scale, separate from aggregates. Centrally-located, sealed hopper discharges cement *within* the aggregates. This minimizes dusting, and pre-mixes all materials.

Econoplant is ideal for clamshell charging — has large aggregate bin openings. Charging height is only 30½ feet. Where desired, it can be equipped with belt conveyor, open-inclined or vertical-enclosed bucket elevator for aggregates, at additional cost — also auxiliary storage silo, and undertrack screw conveyor system for cement.

Other optional accessories: bin signals, water meter — and weatherproof electric control panel for all plant motors (a package unit, requiring only simple field wiring). See your local Johnson distributor — or mail the coupon *today*.

C. S. JOHNSON CO., Champaign, Ill.
Send us more information on Econoplant

NAME_____

TITLE_____

COMPANY_____

STREET_____

CITY_____

STATE_____

J804 "ENR"

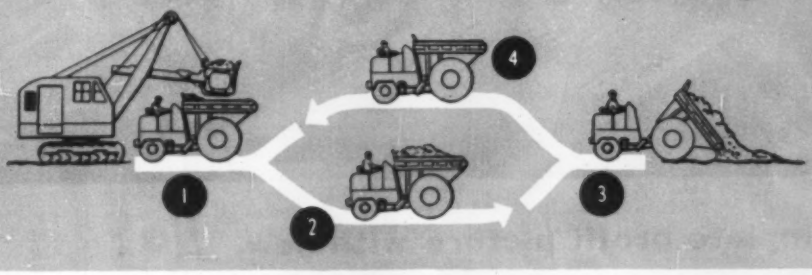
C. S. JOHNSON COMPANY

CHAMPAIGN, ILLINOIS • STOCKTON, CALIFORNIA

Koehring Subsidiary

CONCRETE PLANTS • BINS • BATCHERS • HOPPERS • ELEVATORS • SILOS • CONSTRUCTION MIXERS • BUCKETS

How to haul *without turning:*



1. **Dumptor gets load, with body forward in travel position.**
2. **Pulls away from shovel, body forward, ready to dump.**
3. **Dumps in one second — ready to shuttle back for next load.**
4. **Returns to shovel in high gear — all without turning.**

Shuttling between loading unit and dump area, Koehring® 6-yard Dumptor® travels round-trip *without turning.* It operates with equal ease in *both directions* along narrow haul roads, in tunnels, on overhead trestles — is especially practical for stockpiling, feeding crushers, loading cars. Dumptor gets this unique, no-turn advantage through a constant-mesh transmission that gives the same 3-speed travel in either direction.

Increases hourly output over 10%

By eliminating at least two slow turns on every trip, Dumptor cuts 30 seconds off normal cycle-time. This adds up to a substantial increase in yards or tons hauled per hour. For example — take a typical 1,000-foot haul where you are getting an average of 13.6 trips an hour with 2-turn operation. Even if Koehring Dumptor took the same time to load, haul, dump and return, its *no-turn* advantage would give you 15.4 trips. That adds up to an increase of 1.8 trips an hour on the same 1,000-foot haul.

Gravity-dumping cuts another 15 to 25 seconds off cycle-time. There's no waiting for slow-acting body-hoists. Operator trips the release lever, and *gravity* dumps the 6-yard load in *one second.* Costs stay low, because with gravity-dump, there are no expensive hoist replacement parts, or hoist maintenance.

Check what these Dumptor advantages mean in increased production, lower costs on your work. Call your Koehring Distributor or write for more information to:

KOEHRING DIVISION of Koehring Company, Milwaukee 16, Wisconsin

K812

KOEHRING® DUMPTOR®

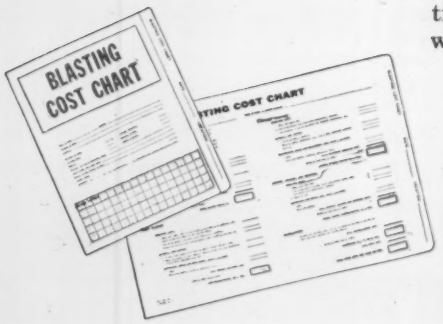
EXCAVATORS • CRANES • *twinbatch*® PAVERS • FINISHERS • MUD-JACK®

TRUE
WHAT ARE YOUR BLASTING COSTS?

Get a complete profit picture with new, free Blasting Cost Chart! Let the Atlas Man show you how

Explosives costs alone don't always determine value of a blast. The explosives used have a direct effect on drilling, digging, hauling and crushing costs. Now, a free, simplified computing method—developed by Atlas, gives you a true, complete cost analysis of profits, without involved bookkeeping.

The Atlas Blasting Cost Chart enables you to protect or improve your profits. What's more, it's yours without cost and you can keep your figures confidential. The Atlas representative nearest you will be glad to show you how it works—without obligation.



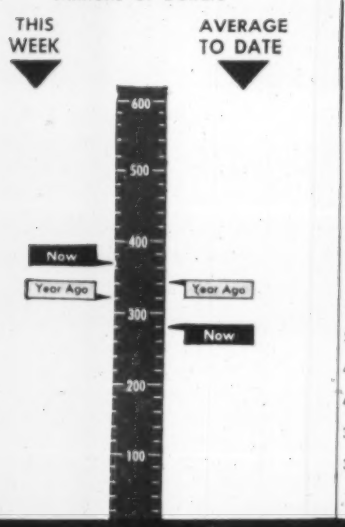
EXPLOSIVES DIVISION
ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE *offices in principal cities*

Construction Scoreboard

ACTIVITY THIS WEEK

Contract Awards
Millions of Dollars

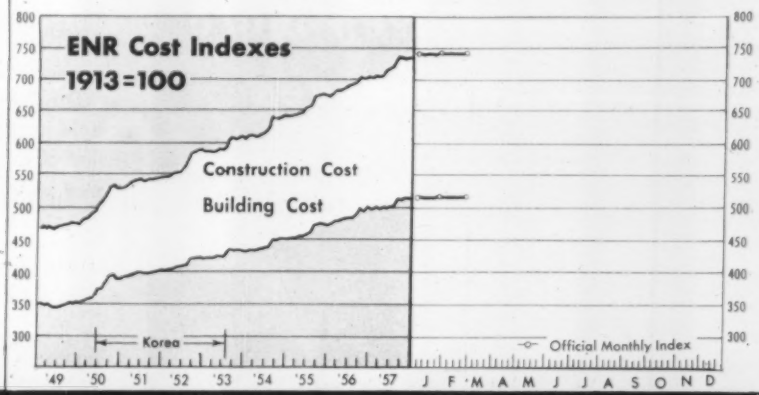


COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Feb. 27 1958	% of Change from Jan. 30 1958	% of Change from Feb. 28 1957
Construction Cost	744.41*	+0.08	+5.0
Building Cost	516.09*	+0.06	+2.9

* Official Monthly Index for March 1958

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 10 wks 1958	Chge '57-'58 %
	millions		
All Heavy Constr.	$365.1	$2,798.7	−18
Private	168.3	1,302.6	−23
Public	196.8	1,496.1	−13
State & Municipal	161.9	1,197.7	−7
Federal	34.9	298.4	−32
By Type of Work			
Public			
Waterworks	4.1	39.0	−33
Sewerage	10.2	102.3	+36
Bridges*	10.9	79.0	−31
Highways	53.2	417.2	−22
Earthwork, Waterways	7.7	139.7	−34
Buildings, Excl. Housing	68.4	408.5	−2
Housing	24.4	221.2	+103
Unclassified	17.9	89.1	−57
Private			
Mass Housing	76.5	429.6	−19
Commercial	48.5	325.7	+18
Industrial	37.5	440.5	−40
Unclassified	5.8	106.9	−28

*Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Feb. 27	Cum. 9 wks 1958	Chge '57-'58 %
	millions		
Corporate Securities	$162.5	$972.4	−7
State and Municipal:			
All Except Housing	28.6	1,263.0	+39
Housing	...	1.0	−96
Federal Loans	1.5	40.9	+115
Federal Aid	...	....	...
Total Nonfederal	$192.6	$2,277.2	+14
Federal Appropriations:			
Projects in U. S.	$520.0	$520.0	...
Outside U. S.	...	....	...
Total New Capital	$722.6	$2,797.2	+40

WAGE RATES, 20-cities average

	Mar. 1958	% Change from Feb. 1958	% Change from Mar. 1957
Common	$2.382	+0.1	+7.3
Skilled (average 3 trades)	3.628	+0.1	+4.8
Bricklayers	3.880	+0.2	+3.9
Structural Ironworkers	3.641	+0.1	+5.5
Carpenters	3.361	0	+5.0
Equipment operators (average three types)	3.286	0	+5.8

MATERIAL PRICES, 20-Cities average

Structural Steel (average 3 mills), per cwt	$5.275	0	+5.5
Lumber, 2x4 Fir, per M fbm	111.24	−0.2	−4.0
Lumber, 2x4 Pine, per M fbm	99.48	+0.3	−2.2
Cement, bulk, per bbl	3.97	0	+2.6
Sand, per ton	2.497	0	+1.9
Ready-mixed concrete, per cu yd	13.836	0	+2.5
Gypsum sheathing, ½″x2′x8′, per Msf*	62.410	0	−0.8
Fiber board sheathing, ½″ sq. ed., per Msf*	70.820	0	−0.9
Mineral wool insulation, 3′ batts, per Msf*	71.010	0	−0.6
Crushed stone, 1½″, per ton, CL	2.838	0	+0.9
Concrete blocks, sand/gravel, 8″x8″x16″, each*	.229	+0.4	+0.9
	Feb. 1958	Jan. 1958	Feb. 1958
Brick, common per M	$38.150	0	+2.0
Lime, hydrated finishing, per ton, CL	36.808	0	+3.4
Structural clay tile, 3x12x12″, per M, 2,000 up*	184.473	0	+4.8
Vitrified clay sewer pipe, std 12″, per ft	1.260	0	−3.7
Concrete sewer pipe, 12″, per ft	1.241	0	+11.3

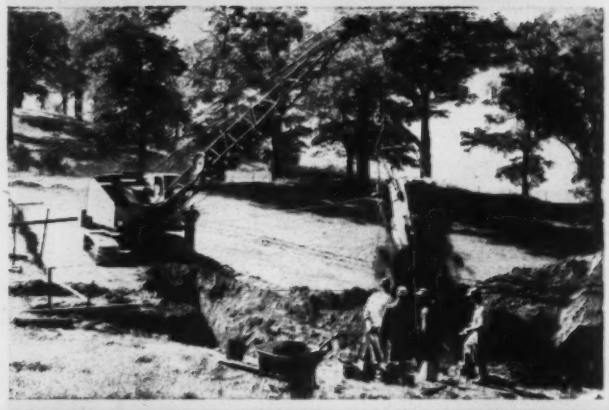
* Delivered, truck lots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1957	1913=100	1949=100	1913=100	1949=100	1913=100	1949=100
Mar	708.64	148.56	501.37	142.52	553	160
Apr	709.30	148.69	501.37	142.52	564	163
May	715.70	150.04	503.01	142.99	553	160
Jun	721.36	151.22	504.17	143.32	588	170
Jul	724.15	151.81	506.62	144.01	587	170
Aug	738.63	154.84	516.90	146.93	528	153
Sep	737.78	154.66	516.12	146.71	466	135
Oct	737.14	154.53	516.78	146.90	506	146
Nov	737.43	154.59	516.81	146.91	457	132
Dec	738.08	154.73	516.27	146.76	357	103
1957 Average	**723.85**	**151.74**	**508.67**	**144.59**	**517**	**150**
1958						
Jan	743.44	155.85	516.79	146.90	368	106
Feb	743.77	155.93	515.78	146.61	446	129
Mar	744.41	156.06	516.09	146.69	...	...

NOW...THE LORAIN-26

offers you even more new advantages



More and more quality features are being added constantly to the heavy-duty, ¾-yd. Lorain-26 to put it even further ahead in high-speed production and lower maintenance.

For instance, today all Lorain-26's are equipped with an improved, vertical swing shaft, mounted on anti-friction bearings. Also, all horizontal and vertical power shafts, except the infrequently-used boom hoist, now revolve on anti-friction bearings. Even the turntable rollers are so mounted.

Draglines are now equipped with a new style, fully revolving trunnion-type fairlead that adds weeks to cable life.

And look at these additional features . . . *"E-Z" action operating controls on anti-friction bearings—five identical operating clutches—Hydra-Ease power operation of all crawler functions—the exclusive square-tubular-chord crane boom for lifting more at greater reaches—optional extra-wide crawler for even greater crane capacity—extra-strong, precision drop-forged treads—hydraulic coupling or torque converter.*

You get all these advantages in this feature packed, heavy-duty ¾-yd. machine that already has proven itself in the field. Also, investigate the top-notch service and parts facilities of your Thew-Lorain Distributor. His contribution to years of trouble-free operation is another part of what you get when you buy a Lorain.

THEW LORAIN®

reliability in action

THE THEW SHOVEL CO., LORAIN, OHIO, U.S.A.

Housing Boom Seen After 1965

Homebuilding industry must cut cost and maintain quality to meet huge future demand successfully

The nation's next major boom in housing demand will occur after 1965, according to the Division of Construction of the U. S. Department of Labor. And until then, pressure for new housing is expected to be less than the average of the last seven years.

The agency emphasized that during this period homebuilders and the manufacturing segments of the industry should make a concerted effort at reducing housing costs so that it will be in a position to meet the demands of the future.

• **Factors reducing demand**—The agency said that the forces tending to reduce demand up to 1965 are:

• Drop in the net increase of households. The increase from 1957 to 1965 is estimated at 755,000 annually, which is 100,000 less than the annual gain from 1950 to 1957.

• No significant increases in houses demolished, lost by disaster or other reasons. During the period 1950-56, loss by demolition was at a rate of 170,000 annually, while the disaster or other reason loss was 300,000 annually.

• Overall demand in the nation will not be increased by any important change in either population migration or mobility. The report said, however, that the trend from farm to city, from city to suburb and to the West and the South will create higher building demand in some areas than in others.

• The current vacancy rate of 2.4% of the housing supply in the third quarter of 1957 and 2.5% in the final quarter of 1957 is adequate to provide freedom of movement to families changing location each year. This was equal to 20% of the population during the year ending March 1956.

• **Boosting near-term demand**—With the basic physical reasons acting as a deterrent to a big upswing in housing construction through 1965, the homebuilding industry must base its expansion plans on social and economic factors during the short term.

The agency reported that "a desire for better housing undoubtedly exists in almost all our population." Increasing size of families brought about some of the current demands for more space in housing, while the quality of housing now occupied possibly is not equal to other aspects of many families' standard of living. Demand could come from this group.

In addition, according to the agency, there could be a significant growth in the number of two-house families.

• **Cost as an obstacle**—However, the Construction Division emphasized that if the desire for better housing is to be stimulated within the framework of the existing market conditions, the industry would have to make better housing available at prices within reach of families of all income levels.

• **Price-income matching**—It was indicated that in 1950, the pricing of new houses was better fitted to the incomes of that year than it was in 1956. The report said that using the rule-of-thumb measure that purchase price should not exceed 2½ times a buyer's income, there appeared to be no overbuilding in the higher price ranges in 1950. But in 1956, about 44% of the new houses were priced at $15,000 or more, whereas only 33% of the families had incomes of $6,000 or more, which would qualify them to buy houses in that price class.

Although prices had been on the rise during the last seven years, the agency said that families were prompted to buy homes when down payments and monthly housing ownership expense were considered less than rent. But citing the Consumer Price Indexes, the agency reported that a comparison of rent increases with the rise in house ownership expenses indicates "this situation probably no longer favors prospective buyers of new homes."

Rents advanced by 22% whereas ownership expenses for new homes that were bought with FHA-insured mortgages rose by 39%.

(*B&F continued on page 136*)

How Many Men Make a Consulting Firm?

Among the by-products of ENR's study into consultants' activity in construction supervision (see p. 25) are current figures on firm size in numbers of employees. Here's how the firms contacted rate themselves today on personnel, as well as the number of people they had in field supervisory work in 1957:

The Firm	Its Present Payroll	Its Field Force In 1957
Michael Baker, Jr., Inc.	1,009	100
Charles T. Main, Inc.	1,000	225
Howard, Needles, Tammen & Bergendoff	700	50
Sverdrup & Parcel Engineering Co.	700	100
Parsons, Brinckerhoff, Hall & Macdonald	500	225
Black & Veatch	480	63
Ammann & Whitney	415	20
Fay, Spofford & Thorndike	410	129
Daniel, Mann, Johnson & Mendenhall	350	9
DeLeuw, Cather & Co.	350	25
Metcalf & Eddy	350	125
Porter, Urquhart, McCreary & O'Brien	350	70
Palmer & Baker Engineers	325	35
Rader & Associates	275	25
Consoer Townsend & Associates	247	60
Whitman, Requardt & Associates	235	36
A. C. Martin & Associates	215	20
J. E. Greiner Co.	206	15
Stanley Engineering Co.	206	27
King & Gavaris	200	50
Richardson, Gordon & Associates	163	5
Frederick R. Harris, Inc.	160	30
Goodkind & O'Dea	150	25
Forrest & Cotton	115	18
Harland Bartholomew & Associates	105	4
Abbott, Merkt & Co.	95	7
Moran, Proctor, Mueser & Rutledge	90	12
Lockwood, Andrews & Newman	82	8
Tudor Engineering Co.	62	25
Frankland & Lienhard	50	20
John A. Blume & Associates	45	7
Alvord, Burdick & Howson	40	9
Horner & Shifrin	40	9
Stevens & Thompson	36	5
Hillman & Nowell	24	3
S. B. Barnes & Associates	21	2
H. J. Brunnier	18	6
W. R. Holway & Associates	17	5

BIG MU

These new Chevrolet heavyweights are true big-tonnage units . . . trucks built from stem to stern to save you time and money on *big* jobs. Here's all the proof you need!

Chevrolet heavy-duty models for '58 are "big truck" all the way—big-muscled and tough as they come with the industry's best known big-truck components. They're ready to move mountainous payloads with G.V.W.'s that go all the way up to 36,000 lbs. They're ready to keep you going and saving with powerful, high-torque V8's . . . durable Eaton and Timken axles . . . rugged New Process, Spicer and Powermatic transmissions . . . big, safe Hydrovac, Air-Hydraulic or Full-Air brakes . . . sturdy cast spoke or disc wheels . . . mighty Triple-Torque tandems . . . all available either as standard equipment or as extra-cost options.

Famous work-proved big-truck components such as these (and there are *many* more) are reasons why you can count on the heavyweight Chevrolet of your choice to *stay* on your job and *save* on your job! Look 'em over at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

YOUR BEST BET'S CHEVY IF YOUR HAULING JOB IS BIG!

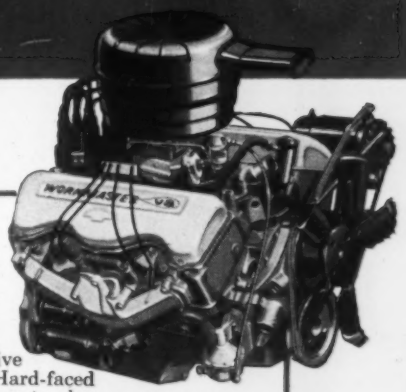
CHEVROLET

NEW CHEVROLET

SCLED

TO CUT CONSTRUCTION COSTS!

1958 Chevrolet heavyweights with G.V.W.'s up to 36,000 lbs. (G.C.W.'s up to 50,000 lbs.) and the toughest big-truck components in the business!



BIG MUSCLE (AND HUSTLE) UNDER THE HOOD!

Revolutionary Workmaster V8, standard in Series 90 and 100. This all-new engine puts out 230 h.p. to reduce running time, 335 ft.-lbs. of torque to pull you through the tough spots . . . yet it maintains a low r.p.m. level, a moderate engine speed. This low r.p.m. factor spells *economy*—lower day-to-day costs than you've ever known before in big-tonnage hauling. It's the result of Wedge-Head design, a power and economy producing type of construction no other truck engine offers. And those rugged heavy-duty features listed at the right help provide matchless big-truck performance, too!

No other truck engine at any price gives you this complete lineup of top-quality heavy-duty features:

Valve-in-head design • Hydraulic valve lifters • Sodium-cooled exhaust valves • Positive type exhaust valve rotators • Hard-faced exhaust valves • Hardened exhaust valve seats • Induction hardened crankshaft • Fully machined combustion chamber • Chrome-plated top piston ring Moraine 400 extreme-duty bearings • Full-Flow oil filter Oil bath air cleaner • Positive crank-case ventilation • Centrifugal-vacuum type governor • Heavy-duty 5-blade fan

TASK · FORCE 58 TRUCKS

Contract Awards Rise Again in February

Awards of $1.17 billion represent 17 % rise over January, but total to date is 21% below last year

For the second consecutive month the volume of heavy construction contracts awards reported by ENR has moved upward. February's $1.17 billion in awards was 17% above the January weekly rate. The volume of private contracts, at $613 million, led the January weekly rate by 47%, with every type of private construction expanding by significant percentage. The cumulative two month total of $2.4 billion, however, is 21% below the same period of last year.

Federal work also continued to gain, and February contracts totaled $137 million, 36% over the January rate. But the 13% drop in state and municipal activity, to $425 million, offset part of the gains scored in other sectors. Both private and public awards fell short of last year's comparable figure, though some types of work showed important increases.

• Industrial work a star—Industrial building awards reached $230 million in February, topping all types of contracts. On a weekly basis this is 67% greater than in January and the best rate of any month since August 1957.

Power plant additions went to contract in Massachusetts, Utah, Louisiana and Michigan. A $15 million pulp mill contract was let in Washington, a $12 million aluminum rolling mill in Wisconsin, a $10 million medical research building in Michigan, and a $10 million polyethylene plant in Indiana.

Private masshousing ranked second in volume in February with contracts of $171 million, up 18% over the January rate and only 6% short of a year ago.

The leading private project was a 700-unit development at Livonia, Mich., costing $15 million.

There was plenty of activity in commercial building during February. The contract volume rose 44% over its January weekly rate, and at $149 million, was 4% ahead of the volume recorded a year ago. New York City accounted for three office buildings with a total contract value of $60 million. Commercial building was the only category of private construction ahead of 1957. It beat last year's figure by 26%.

Private unclassified contracts in February totaled $63 million, double the previous month's weekly rate.

• Other increases—Increases over the January weekly rate were recorded for the following categories in the public works sector: highways (5%); bridges (85%), housing (55%), other types of building (16%).

Declines were registered in these categories: waterworks (36%), sewerage (31%), earthwork, irrigation and drainage (88%), unclassified (29%).

When compared with February 1957, gains were found in these groups: sewerage (161%), housing (165%), buildings other than housing (7%), bridges (5%). Declines were recorded in the other categories: waterworks (70%) highways (19%), earthwork, irrigation and drainage (85%), unclassified (64%).

Public housing continues to get its biggest boost from Capehart projects at military bases. A $22 million job at Ft. Leonard Wood, Missouri, topped February jobs. Other Capehart projects included, Luke AFB, Ariz., $8.9 million; Ft. Bliss, Tex., $7 million; Altus AFB, Okla., $1.1 million; and Griffiss AFB, N. Y., $6.8 million.

Other big housing contracts let in February were an $11.8 million job at Ft. Ord, California, and an $8.3 million project for the New York City Housing Authority.

(*B&F continued on page 138*)

Engineering Construction Contracts—February '58

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Four Weeks—Thousands of Dollars (000 Omitted)

	February, 1958							U. S. Cumulative Two Months		% Change	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1958	1957	'57 to '58	February 1958
Public Works											
Waterworks	361	1,318	1,080	1,479	4,883	2,747	**11,868**	**34,913**	55,033	−36	452
Sewerage	672	5,922	1,375	9,527	4,787	10,393	**32,676**	**92,081**	70,495	+31	3,415
Bridges	694	18,046	1,413	8,511	10,433	1,612	**40,709**	**68,173**	102,703	−34	6,441
Earthwork and waterways	973	1,440	1,348	68	5,899	2,100	**11,828**	**131,788**	203,811	−35	4,134
Streets and roads	6,237	9,485	28,940	50,334	47,991	22,952	**165,939**	**364,071**	469,982	−23	4,976
Public buildings, residential	1,000	22,829	14,094	781	42,091	28,383	**109,178**	**196,973**	105,002	+88	4,669
Other public buildings	8,576	45,440	16,909	32,774	32,275	27,698	**163,672**	**340,038**	365,602	− 7	6,071
Unclassified	844	6,015	6,892	2,965	4,653	4,472	**25,841**	**71,286**	190,355	−63	723
Total public	**19,357**	**110,495**	**72,051**	**106,439**	**153,012**	**100,357**	**561,711**	**1,299,323**	**1,562,983**	**−17**	**30,881**
Federal government (included in above classifications)	1,174	17,779	9,539	4,211	68,176	36,372	**137,251**	**263,585**	421,631	−37	10,585
Private											
Bridges	.....	.....	.....	.....	.....	.....	.....	.....	1,220	−100	.....
Industrial buildings	38,801	17,975	37,965	86,214	11,040	38,302	**230,297**	**402,936**	691,661	−42	4,985
Mass housing	7,106	45,093	4,142	51,823	35,554	27,642	**171,360**	**353,053**	478,820	−26	24,281
Commercial buildings	7,109	77,798	6,331	21,062	19,593	16,667	**148,560**	**277,101**	219,801	+26	2,650
Unclassified	475	27,600	781	25,260	3,217	5,530	**62,863**	**101,191**	145,267	−30	8,211
Total private	**53,491**	**168,466**	**49,219**	**184,359**	**69,404**	**88,141**	**613,080**	**1,134,281**	**1,536,769**	**−26**	**40,127**
Total Engineering Construction:											
February, 1958—4 weeks	**72,848**	**278,961**	**121,270**	**290,798**	**222,416**	**188,498**	**1,174,791**	.....	.....	.....	**71,008**
January, 1958—5 weeks	68,259	372,560	224,906	212,792	245,793	134,503	**1,258,813**	.....	.....	.....	110,072
February, 1957—4 weeks	97,428	284,258	139,166	339,815	207,814	367,563	**1,436,044**	.....	.....	.....	150,824
Two Months—1958	**141,107**	**651,521**	**346,176**	**503,590**	**468,209**	**323,001**	.....	**2,433,604**	.....	**−21**	**181,080**
Two Months—1957	197,242	677,445	390,237	696,192	470,478	668,158	.....	.....	3,099,752	.....	270,506
% Change '57 to '58	−28	−4	−11	−28	−1	−52	.....	.....	.....	.....	−33

THE BEST SAW OPERATORS REACH FOR THE BEST BLADES

That's Why

4 OUT OF 5 BUY...

Clipper
"SAILS RIGHT THRU"
DIAMOND BLADES

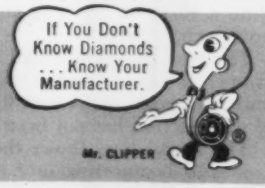
TAKE THIS CD-7245-3...

It's a New Clipper Bond with a full 3/16" Diamond Depth—that will positively out-cut, out-last and out-perform ANY BLADE ever developed, to cut all HEAVY and LIGHTWEIGHT BLOCK, STONE and BASIC REFRACTORIES. Here's a Long-Life Blade that will give you real performance! Call your Clipper Factory Trained Representative for a performance test on your job or for Same Day Shipment from your nearby Clipper Branch Warehouse.

By The Makers of
CLIPPER
SUPERMATIC MASONRY SAWS—
No Head Angle Adjustments to Make.
HI-LO Control Wheel Does Everything!

Ask your Clipper Factory Trained Representative for **FREE TRIAL!**

CLIPPER MANUFACTURING COMPANY
2812 WARWICK • KANSAS CITY 8, MO.
Sold Direct From Factory Branches in Principal Cities Coast to Coast
FACTORIES IN ENGLAND—FRANCE—GERMANY—ITALY 323X



Prices Steady

Construction, building indexes up only slightly; one is at a new record

Construction and building costs both are holding steady for the second consecutive month as measured by ENR's 20 cities Construction Cost Index and the Building Cost Index.

The March value for the Construction Cost Index is 744.41 only a shade higher than February's 743.77. However, the value is at a new all-time high. The ENR Building Cost Index also shows but a slight change from last month.

The March reading was 516.09 compared with 515.78 in February. (Both cost indexes are based on average costs in 1913 as 100.)

Though costs have changed little since the rash of cement price increases on January 2, the Construction Cost Index is 5.0% higher than one year ago. The Building Cost Index is up more moderately—a rise of 2.9% in the last 12 months. The Building Cost Index actually is below its all-time high reached late in September 1957. However, the margin of difference between the record peak of last year's third quarter and the current value is less than one full point.

• **Wages, lumber responsible**—The small advances in the indexes this month are due to wage increases in Denver and St. Louis and, to a lesser extent, lumber price changes in Baltimore, Cleveland and Detroit.

Common laborers on heavy construction and buildings in Denver received a five cent hourly wage hike effective March 1, while structural ironworkers in the same city received a seven cent hourly wage boost.

St. Louis bricklayers are now drawing 17.75 cents more per hour as of March 1. This increase includes 15 cents more base pay, plus 2.75 cents for health and welfare payments. The increases originally were scheduled to go into effect January 1, but the union agreed to defer the boost until the construction market picture cleared. Extensive unemployment and a slowdown in new projects caused unions and contractors to move cautiously when it came to adding to the costs of construction.

• **Relatively quiet lumber market**—The lumber market is fairly quiet in the field of price.

The few changes being posted do not point to a definite trend—unless perhaps that the downtrend has bottomed out. A $4 per Mfbm rise for southern pine 2 x 4's in Baltimore combines with a $0.5 per Mfbm advance for Detroit Douglas fir and southern pine 2 x 4's to offset the $4 per Mfbm decline in fir prices at Cleveland.

Steel Makers to Reduce Capital Spending in '58

Iron and steel companies will spend $750 million less for plant addition and replacement in 1958 than in 1957, the American Iron and Steel Institute reported. Last year outlays by the industry for expansion and improvement totaled $1.75 billion, the peak year. In 1958 expenditures of $1 billion are planned.

The outlays in 1957 brought capital investment by the industry since World War II to $9.9 billion, the Institute stated. "In recent years," it continued, "the cost of construction and new equipment has been greatly increased by inflation. . . . Inadequate or unrealistic depreciation laws prevent steel companies from recovering sufficient funds for obsolete facilities as they wear out.

The Institute's report covers, in addition to iron and steel-making facilities, blast furnaces, coke ovens, rolling mills, research facilities and other types of equipment.

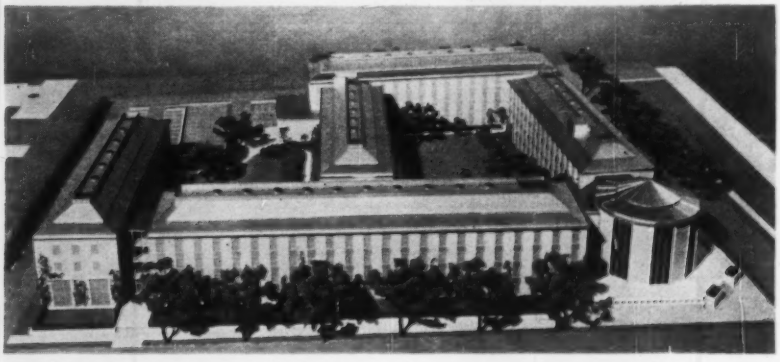
Contractor Wins Use Tax Controversy in Maryland

The Maryland Court of Appeals has upheld a county circuit court order quashing a $14,000 use tax assessment upon machinery and equipment brought into the state by a Delaware contractor for use on road projects.

The high court, in its decision, noted that the state had offered no proof that the contractor intended to use the equipment in Maryland at or about the time it was purchased outside the state. In answer to the argument that the contractor purchased the machinery in question with a "general intent" to use it in Maryland, the court said the law "implicitly requires something more than a general intention" before the tax may be levied.

The contractor, James Julian, Inc., Wilmington, had protested the tax levy on 46 pieces of machinery he had bought outside Maryland before he had obtained a contract for work in that state.

The firm has paid the use tax on all construction machinery purchased outside Maryland and brought into the state after it had the contract.



New Engineering Center Planned

An $8 million engineering quadrangle has been approved for Princeton University by the institution's board of trustees. The plans approved also include a library with seven times the space of the present engineering library, shop facilities, a computational center with a modern digital computer and instrument center.

The new quadrangle will be located in a recently developed area of the university grounds. A date for the start of construction has not been set.

The model here shows the civil and geological engineering unit at the left, the mechanical engineering and plastics building in the foreground, electrical engineering unit at the right, administration facilities in the rear and the chemical engineering section in the center.

Since 1928, undergraduate engineering enrollment has increased from 150 to 550 students and graduate enrollment now numbers 140. The faculty has increased from 12 to its present 60 men of professional rank, excluding a full-time research staff.

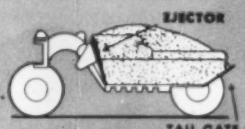
Architects for the quadrangle are Voorhees, Walker, Smith & Smith.

FROM ST. LAWRENCE SEAWAY TO CALIFORNIA

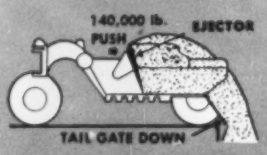
YUBA
Movall

Dumping glue-like clay on St. Lawrence Seaway. "Better than any other hauling unit for this type of work" says contractor.

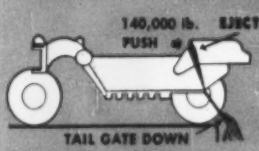
Accurately spreading surfacing material in fifth gear at Mather Air Base, California. No tractor or motor grader was used.



LOADED — The big target, big capacity body carries its load low, maintaining high ground clearance since frame and body are integral and compact.



DUMPING — Level body offers no gravity resistance, with potential 140,000 lb. ejector push assuring complete positive discharge with minimum use of power.



EMPTY — Sides and bottom are scraped clean, eliminating need for "mucking out" or decreasing capacity for next full load. Complete ejection takes only 11 to 14 seconds.

This rugged multi-purpose high speed hauler outperforms rear-dumps and bottom-dumps on most every type of off-highway job

Earthmoving that only a MOVALL can do at such high profit

Exclusive level action positive ejector spreads surfacing material on the fly, completely unloads sticky clay or any top loading material. Full stability during all operations, high clearance, short turning radius, big capacity, and less downtime mean *more profits* on *more types of jobs.* See your Allis-Chalmers, Caterpillar, or International Harvester Dealer – or phone or write Yuba direct. *Now is the time.*

MA-803

YUBA MANUFACTURING DIVISION

704 EAST H STREET • BENICIA, CALIFORNIA

YUBA CONSOLIDATED INDUSTRIES, INC.

Anchored by telescoping hydraulic stabilizers, Case backhoe digs hard, dry clay with ease. Exclusive hydraulic foot-controlled swing leaves operator's hands free to maneuver bucket and dipper-stick while swinging boom. Comfortable backrest seat reverses for operating loader.

Power-steering and shuttle transmission, combined with 42 HP high-torque Case engine and big 13 x 24, 6-ply rear tires, give ½-cu. yd. "320" loader extra power and maneuverability to do fast, clean job of backfilling and grading.

Fast Case® wheel and crawler team

cuts septic system costs 33%

Murdock used 1-cu. yd. crawler-loader to transport tile from truck to trench . . . says smooth-starting torque-converter drive, power-shift transmission and wide, deep bucket enable him to carry 120 sections per trip without breakage.

CERTIFIED OWNER REPORT

Two versatile Case machines — a 1-cu. yd. TerraTrac® Model 600 *crawler*-loader, and a Model 320 *wheel-type* backhoe-loader — have cut installation costs on septic systems by *one-third*, for contractor Carl D. Murdock, Indianapolis, Ind.

On job pictured, Murdock's crew installed a *large septic tank and 300-ft. seepage bed* in just 4 hours. The heavy-duty Case backhoe made quick work of digging the 6′ x 11′ x 10′ septic tank hole, and 24″ x 36″ drain trench. The "600" crawler carried tile from truck, distributed it along trench, and dumped 60 tons of crushed rock into filter bed. Both machines teamed up to complete backfilling and finish-grading.

Faster, easier operation

Murdock likes the *extra speed and maneuverability* of both Case rigs . . . says the "320" wheel unit, with its effortless power-steering and no-shift shuttle transmission, is *"at least 30% faster than competitive machines on loader operations."* Similarly, the combination of torque-converter drive, power-steering and instant-shift hydraulic transmission practically doubles the amount of work the "600" can do. As Murdock puts it, *"I feel it's more important to have power-shifting and power-steering on a tractor than on a pleasure car,* because my operators spend 8 to 10 hours a day on a tractor, compared to a much shorter time in a car."

See them in action

Call your nearest Case Industrial Dealer now for a free demonstration of either or both of these revolutionary Case-built wheel and crawler units — or mail handy coupon for free catalog and details of new financing plans, with seasonal "skip-payment" privileges.

CASE

1st in quality for over 100 years

Industrial wheel and crawler tractors • loaders • dozers backhoes • fork lifts • engines

Clip . . . Mail

J. I. CASE CO., Dept. C1418, Racine, Wis., U.S.A.

Send free catalog on

- ☐ Case TerraTrac "600" crawler-mounted loader
- ☐ "320" wheel-type backhoe-loader

Name .....

Company .....

Address .....

City ..... State .....

Closed Shop Practices Curbed

Unions and contractors given three months to correct violations before new NLRB enforcement begins

The traditional closed shop hiring practices in the construction industry are being abandoned under orders of the government.

The National Labor Relations Board, through its General Counsel Jerome D. Fenton, has advised both contractors and union officials that hiring only union members through union hiring halls—the dominant hiring system in the industry—is now strictly forbidden. Severe financial penalties are threatened for violators.

The deadline for ending such practices is June 1.

The closed shop had been outlawed by the Taft-Hartley Act in 1947 but, until the past several years, that practice went officially unnoticed at the NLRB. Since then, individual cases of hiring discrimination against non-union members have been ruled on by the board.

Now, the board—via its general counsel—is ordering a full crackdown if closed shop clauses in construction contracts are not deleted. Both contractors and union officials are taking it seriously.

In a recent letter to the AFL-CIO Building Trades Department, the Associated General Contractors and National Constructors Association, Mr. Fenton urged all parties to end voluntarily closed shop hiring arrangements. "Such overall elimination of illegal hiring arrangements, by voluntary action . . . would clearly be an important step in the general public interest and in furtherance of the fundamental rights of employees," Mr. Fenton wrote.

However, if the unions and contractors don't comply by June 1, Mr. Fenton warned, he'll recommend that the board penalize both sides under the "reimbursement remedy" set up in a decision two years ago, known as the Brown-Olds case. He said he'd apply the Brown-Olds penalty, providing that all dues and assessments collected under the closed shop from the start of a construction contract be returned to the workers.

The Brown-Olds decision provides that both the contractor and the union are responsible for the reimbursement. In addition, the usual penalty granted a non-union worker who couldn't get a job under a closed shop would also apply—payment to him of a sum amounting to the wages he would have earned.

Mr. Fenton's letter stipulated that the Brown-Olds penalties would not apply before June 1, but that the usual back-pay penalty would apply in cases up to then where a violation of the closed shop ban is discovered.

• **Hiring changes**—This pledge to wipe out the closed shop hiring practices, backed by the severe Brown-Olds penalties, is expected to bring some immediate contract changes in the construction industry.

Already, the Building Trades Department is notifying member unions of the NLRB general counsel's action, noting the steps that will have to be taken to comply with the order. Contractors, too, are in discussions on ways to rewrite hiring provisions to stay within the law.

Officially, the NLRB says it has been moving against closed shop practices in the construction industry for several years, on a case-by-case basis. The new order is entirely different, however, since it goes at the problem by demanding that the industry and unions take the initiative to end their practices, without waiting to do it by case decisions.

Unofficially, board spokesmen say they have been asked by members of the Senate rackets committee to move against the closed shop. The McClellan committee, which has been investigating corruption in organized labor, has received a number of complaints by non-union members about being frozen out of jobs, but it has said nothing about approaching the NLRB to order a crackdown.

• **Long-range results**—The closed shop ban is sure to cause upheavals in the construction industry. Traditionally, labor unions supply workers in union territory through union hiring halls. Contractors normally do not retain a complement of craft workers because of the extra expense of maintaining a work force when not working on a building contract.

Early reaction to the board's action from both contractors and unions is that they must comply with the orders and contracts will be reviewed to eliminate the clauses that require that only union members be hired. In some cases, this was started several months ago. However, it isn't anticipated at this time that employers will have to set up their own personnel and hiring offices. It is clear that this still can be done through hiring halls run by unions but not limited to union members (ENR Feb. 6, p. 108).

There's no feeling that the NLRB is giving just lip service to the closed shop ban as in the past. Both sides are concerned that the board means what it says, and so they are revamping their hiring practices.

A number of corrective steps in that direction have already been taken as a result of individual cases that have come before the board in the past.

In December, for example, the International Association of Bridge, Structural and Ornamental Iron Workers warned its officers and locals of the NLRB crackdown. The union therefore suggested use of the union shop provisions in its standard shop agreement as a means of avoiding violation of the law. That provision, it said, does "not require that an employee obtain a permit, clearance, or reference from the local union as a prerequisite of obtaining employment" or require that an employee "become, or agree to become, a member of the union before being employed."

One of the pressures expected to flow from the new NLRB policy is a stronger demand within the construction industry for legalization of the pre-hire contract. This would help to accommodate the law to the short-term nature of construction employment and tend to remove one of the principal reasons for setting up closed shop arrangements. It was recommended jointly by labor and management last as a proposed amendment to the Taft-Hartley Act.

Jobless Conference

AFL-CIO will push for Congressional action to stem unemployment tide

An emergency economic and legislative conference on unemployment will be held in Washington, D. C., March 11-13.

Authorized by the federation's Executive Council, the conference is intended to arouse Congress and the public at large to the dangers that attend mounting unemployment, now at 4.5 million.

In calling the conference, AFL-CIO President George Meany said the nation "is now in the midst of a serious economic recession" that will feed on itself unless prompt remedial action is taken.

All national and international

JAEGER *Speeds the Work, Cuts the Cost*

. . . with CONTINENTAL RED SEAL POWER

Completely hydraulic operation on Jaeger's newest Model JX Finishing Machine (shown above following Jaeger screw concrete spreader, and at right from another angle) gets the job done faster, and with less manpower. Model F-226 Continental engine powers gear-type hydraulic pumps, enabling the operator to extend or retract width as much as six feet; drive forward or reverse; oscillate, lift and lower his finishing screeds; swing rear screed when diagonal setting is needed; operate tamper attachment, or raise and lower entire machine on its transportation wheels—all at the touch of a lever. Slab width on this job flared from 12 feet to 18 feet approaching the intersection. But the self-widening feature of the Model JX permitted continuous width adjustment, without stopping and without labor. Take a tip from the performance record of these and other Jaeger products:

STANDARDIZE ON EQUIPMENT WITH DEPENDABLE RED SEAL POWER

CONTINENTAL MOTORS ® Powerful as the Nation AMERICA'S STANDARD

SERVICE FACILITIES AND RED SEAL PARTS AVAILABLE EVERYWHERE

Continental Motors Corporation

MUSKEGON • MICHIGAN

6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.

unions, state and local bodies and directly affiliated unions have been asked to send delegates. Attendance is expected to exceed 1,000.

Delegates will make personal calls on senators and congressmen during the conference to present their views and to urge immediate action.

Meanwhile, a seven-point program for getting the unemployed back to work has been proposed by economic and legislative spokesmen for the AFL-CIO:

- An increase of $100 in the personal federal income tax exemption.
- Public works programs, including public housing, hospitals, schools and flood control.
- Higher unemployment compensation benefits.
- Extended minimum wage coverage and an increase in the minimum to $1.25.
- Improved social security benefits.
- Assistance to economically distressed communities.
- Higher wages without increased prices.

And Walter Reuther has simultaneously submitted a three-point proposal to President Eisenhower—adoption of federal minimum standards for unemployment compensation benefits and their duration, a temporary moratorium on income tax withholding, and an expanded public works program.

Proposal for Eliminating No-Man's Land Criticized

The President's proposal to eliminate the legal no-man's land under the Taft-Hartley Act is viewed as a threat to the "bill of emplover-union rights" now contained in the law.

Under the President's proposal, the law would be amended to allow states to handle labor disputes over which the National Labor Relations Board has declined to assert its jurisdiction.

Russel A. Smith, University of Michigan Law School Professor, says the no-man's land should be eliminated but not at the expense of sacrificing the basic rights established by our national policy.

Three basic rights that the states would be allowed to disregard if the President's proposal is enacted, Mr. Smith noted, are these:

- That unions and collective bargaining are socially responsible institutions.
- That workers are entitled, within reasonable limits, to freedom of choice in union affiliation.
- That society has the right to impose minimum standards of conduct on those concerned with labor relations.

In place of the President's recom-

mendation, Mr. Smith has offered two substitute proposals:

- Requiring the NLRB to take jurisdiction over all cases involving the Taft-Hartley Act, possibly through a system of regional boards.
- Granting initial jurisdiction in cases arising under the law to federal or state courts.

Tougher Law

Stiff penalties sought for boycott activities

A legislative bill introduced in the Michigan Senate seeks to ban secondary boycotts and to require the incorporation of labor unions.

Secondary boycott activity under the bill would be considered a felony punishable by a $5,000 fine or three years in prison or both.

Organizations or officers guilty of violating the law on strikes, picketing, boycotts, injunctions or mediation would also be subject to triple damages in civil actions.

In addition, labor unions would be required to file annual financial reports with the State Corporation and Securities Commission. The reports would be sent to all dues-paying union members.

The boycott provisions are aimed at labor groups that engage in strikes, threats or concerted refusals "to use, handle, transport or otherwise deal with specific articles" in order to "force or require anyone to cease using, selling, handling, transporting or dealing in the products of another producer, processor or manufacturer."

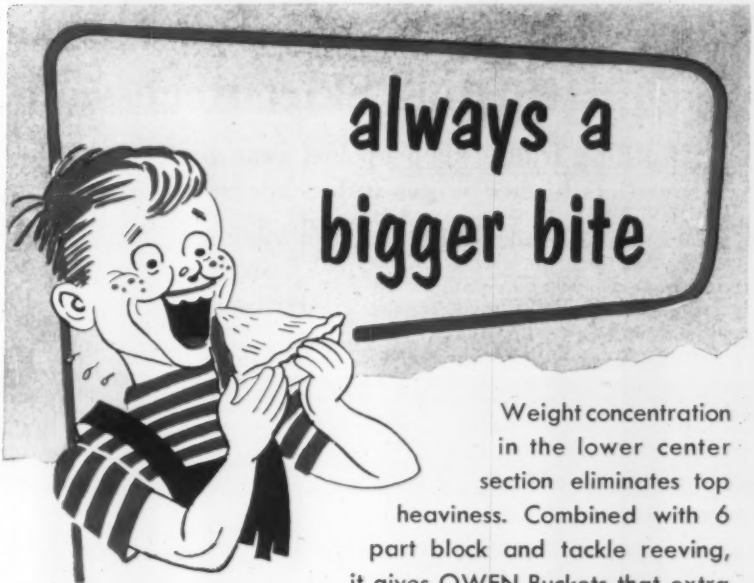
State Building Trades Support Tax Revision

Representatives of building trades councils affiliated with the California State Federation of Labor have endorsed a tax revision initiative that would affect some major changes in the state's sales and income tax laws.

Sponsored by the Citizens Committee for Tax Equality, the initiative would cut the California sales tax from 3% to 2%; reduce the personal income tax of single persons earning less than $8,000 and of married couples with incomes less than $15,500; and increase to a maximum of 46% the tax on incomes over $50,000.

Volunteer petitions to qualify the measure for the November ballot will be circulated by executive officers of the Building Trades and Central Labor Councils. A minimum of 322,429 signatures is required.

(*Labor continued on page 144*)



Weight concentration in the lower center section eliminates top heaviness. Combined with 6 part block and tackle reeving, it gives OWEN Buckets that extra power to dig in at the beginning—and to continue to dig with equal force on both jaws during the entire closing cycle. At the end of the stroke, there is no power loss and lifting tendency is at a minimum.

Other features that make OWEN the leading clam-shell "seller" are:

One-piece Head Construction

Riveted Bowl Construction

Single Main Shaft

Recessed Lip Design

On this our 50th Anniversary Year, The Owen Bucket Company wishes to express our appreciation for the excellent acceptance of our products and pledges to maintain in the years ahead the high quality of design, workmanship and service that has become associated with OWEN Products.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

Wage Demands Skirt Recession

Building trades keep up last year's pace as AFL-CIO predicts higher wages unless recession deepens

People in and outside of labor circles seem to think the state of the nation's economy will have little dampening effect on current wage demands unless the recession grows more critical.

"A reasonable estimate of general prospects for the year," says the AFL-CIO, "is that, if signs of an economic upturn appear by the early summer, and if the cost of living continues to creep up, typical wage settlements probably will be in the 10 to 15 cent range, much as in 1957."

In the construction industry, indications are that the recession has had little, if any, effect on collective bargaining results.

The AFL-CIO outlook stresses the fact that "a temporary downturn in a company's economic position should not be permitted to serve as an excuse for passing up or modifying wage increases that can be taken in stride on the basis of longer-run economic conditions."

The federation argues—and the individual building trades unions are proving it—that most unions "will not be led into abandoning reasonable wage demands on the ground of the general economic downturn."

• **Building trades**—So far, construction unions are doing about as well in collective bargaining as they did last year. Here are some recent examples:

• In Baton Rouge, La., the last of the building trades to settle—painters, roofers and millwrights—agreed on two or three year contracts calling for hourly wage boosts ranging from 45 to 66 cents an hour.

Under a three year contract, roofers received a 21 cent wage increase effective as of January 1. They will get another 20 cents next January and 25 cents more in January 1960. Provision also is made for an employer contribution of one cent per hour per employee for an apprentice training fund.

Painters and paperhangers, who signed a two-year contract, will receive a 45 cent wage boost in four installments—12½ cents January 1, 10 cents July 1, 12½ cents next January 1 and 10 cents April 1, 1959.

Millwrights are slated for a 55 cent increase under a two-year contract—25 cents as of January 1, 17½ cents July and 12½ cents next January 1.

• Plumbers in four central Connecticut counties agreed to a 15-month contract after a four-week strike. They will get a straight wage boost of 20 cents an hour. Existing fringe benefits of 7½ cents an hour for welfare and 15 cents for pensions will be continued.

• Electrical workers in Clatsop County, Ore., have won a 60 cent wage increase under a 19-month contract—30 cents as of February 1, 20 cents July 1 and 10 cents next January 1.

• In New York City, Local 282 teamster members driving sand and gravel trucks, after a two-week strike over working conditions, won an immediate 27½ cent wage boost, retroactive to July 1, 1957, in a two-year contract.

• After a 10-day strike, asbestos workers in Oklahoma City settled for a 40 cent increase in an 18-month contract—20 cents now, 20 cents more on October 3, 1958.

Training in Electronics Urged for Electricians

The addition of a fifth year to an electrical worker's apprenticeship program to afford training in electronics has been recommended by the California State Association of Electrical Workers.

The association is the state organization of the International Brotherhood of Electrical Workers.

Reason for the proposal is a feeling that increasing use of automation in industry makes it necessary for inside wiremen to know how to install electronic controls and other equipment. Electronics work for members of IBEW in the San Francisco Bay Area, for example, reportedly has increased 20% in the last three years.

According to state apprenticeship officials, there is general agreement that electronics training is necessary, but a difference of opinion exists on whether a fifth year of training is necessary. Some would eliminate parts of the present course, substitute electronics training and let the program remain a four year one.

Another proposal submitted by others would make electronics training optional. By this method, a four-year graduate would be a journeyman inside wireman, a five-year graduate a journeyman inside wireman and electronic technician.

Next step is a decision by the joint statewide Electrical Construction Industry Apprenticeship Committee on Apprenticeship Standards.

If the five year program is adopted, it may be incorporated in labor contracts negotiated this June.

Worker Can File a Claim For Coffee Break Injury

The Wisconsin State Supreme Court has ruled that an injury sustained by a construction worker during a coffee break is compensable under the state's Workmen's Compensation Act because it occurred in the course of employment.

The worker was a carpenter who was injured in an auto accident while riding with his employer to a nearby restaurant for his customary mid-morning coffee break.

A resulting lawsuit against the driver for damages was dismissed on the grounds that the disability was covered by workmen's compensation and that a claim should first be filed with the State Industrial Commission.

The Supreme Court said it was committed to the "personal comfort" doctrine. "The act of drinking a cup of coffee during the hours of employment," it said, "is certainly one that ministers to the personal comfort of an employee. Therefore, the fact that plaintiff was not actually wielding a hammer or a saw at the time of injury is wholly immaterial."

Where an employer provides transportation "for an employee going to and from work," the court said, and the employee is injured while using the transportation, the injury "occurs in the course of employment."

Building Trades Center Is Established in Iran

With the help of the International Labor Organization, to which 79 nations now belong, Iran has established and now has in full operation a vocational training center for the building trades.

The center is open to workers from 18 to 35 years of age and provides training in five fields—masonry, reinforced concrete, electricity, carpentry and plumbing. Other sections covering metal working skills will be added in the near future.

Preliminary studies which led to the center's formation at Karadj, near Teheran, were conducted by an ILO expert at Iran's request. Construction started in 1956.

ILO contributed $20,000 for equipment and, under the technical assistance program of the United Nations and its specialized agencies, provided a

chief of mission, a chief instructor and instructors for electricity and reinforced concrete. The other instructors were recruited by ILO at Iran's expense.

Full operation of the center, which contains dormitory facilities, kitchens and dining halls for 200 students, began last July. Director of the center is an Iranian engineer.

Area-Wide Conferences On Apprentice Training

State apprenticeship agencies, in cooperation with the U. S. Department of Labor's Bureau of Apprenticeship and Training, have scheduled five area-wide apprenticeship conferences for this year. They are:

- Minnesota State Apprenticeship Conference, May 1-2, St. Paul.
- 14th Annual Eastern Seabord Apprenticeship Conference, June 23-26, Groton, Conn.
- 10th Annual Southern States Apprenticeship Conference, July 10-12, Little Rock.
- National Railroad Apprenticeship Conference, July 16-18, St. Louis.
- 8th Annual Ohio Apprenticeship Conference, September 8-10, Cleveland.

The second biennial meeting of the Middle Atlantic States Apprenticeship Conference will be held July 13-16, 1959 in Wilmington.

Canadian Unions Protest U. S. Pipeline Workers

Use of American construction workers on the Trans-Canada natural gas pipeline in the Provinces of Manitoba and Ontario has so disturbed Canadian labor unions that they have asked the Canadian government for relief.

In seeking to halt employment of foreign workers, the unions have registered a two-fold complaint:

- Management is discriminating against Canadian labor by giving overtime work and better paid jobs to U. S. workers.
- The construction firms are mostly subsidiaries of U. S. concerns and are importing American workers to do work that could be done by Canadians.

At a time when Canadian unemployment is the highest since the depression, all Canadian labor on the pipeline project has been laid off. Some 200 U. S. workers, however, are said to have been retained in Canada to handle winter emergency jobs.

According to the Pipeline Contractors Association, member firms have had to use American workers because of their greater skills in such jobs as welding.

AFL-CIO Calls Workmen's Compensation Conference

The AFL-CIO has called a special conference to review the experience of 50 years of workmen's compensation insurance.

The conference will be held in Washington, D. C., April 15-17. Representatives from all AFL-CIO departments, national and international unions and state bodies have been asked to attend.

In calling the conference, federation President George Meany said its purpose is to explore existing programs and to see where and how they can be improved.

Mr. Meany noted that one worker in four is not covered by workmen's compensation and that those suffering temporary total disability receive only one-third of their wage losses. On-the-job safety programs, he said, have been neglected, little attention has been paid to physical, mental and vocational rehabilitation, and substantial disparity exists among the states in benefit amounts for the same injury.

Labor Briefs . . .

- **Prevailing wages**—Missouri's state Industrial Commission has set wage rates in 348 instances covering public works programs amounting to $65 million since the state prevailing wage law went into effect August 29. The state attorney general meantime has ruled that the law applies to public works undertaken by cities and school districts.
- **Single bargaining**—Philadelphia has become the nation's first large municipality to give exclusive bargaining rights to a single union for all nonuniformed employees. A new contract with District Council 33, American Federation of State, County and Municipal Employees, AFL-CIO, covers 18,000 city workers.
- **Rips boycott claims**—The Wisconsin Association of Plumbing Contractors was told last week that Kohler Co.'s production has been "the best" it's ever had despite the secondary boycott of Kohler products conducted by the auto workers union. The union has been on strike against the firm since April 1954.
- **Shorter workweek** – The United Auto Workers Union, which is temporarily shelving its drive for a shorter workweek, has asked Caterpillar Tractor Co. to cancel an announced shift from a five to four day production schedule. Union charges it is a device to reduce inventories without incurring jobless benefit and supplemental unemployment compensation costs.

OFFICIAL PROPOSALS

(Continued on following page)

Bids: March 25, 1958

Contract PN-140.020

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
RAIL CROSSOVERS
FOR BUILDINGS 141, 152 & 153

Sealed proposals for the construction of two rail crossovers in the vicinity of buildings Nos. 141, 152, and 153 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 25, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 6, 1958

Bids: March 27, 1958.

Power Authority of the State of New York
Niagara Power Project

ADVERTISEMENT FOR PROPOSALS
for
The Furnishing and Delivery of Generator Main Leads—Isolated Phase Bus for Lewiston Power Plant
Specifications No. PA-N-25010
Niagara Contract No. NP 6

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. University Siding, New York of generator main leads—isolated phase bus for the Lewiston Power Plant in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Standard Time on the 27th day of March, 1958 at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for 13 sets of 15 kv isolated phase bus and associated equipment in accordance with the bidding schedule.

Delivery of the equipment will be required beginning on or before September 3, 1960.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: March 13, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 13th day of March 1958, by Henry A. Cohen, Director Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
Erie	FINTC 58-1	Interstate Route 506-N. Y. S. Thruway	0.48	9" Cem. Conc. Pavt. 2 @ 24' Wide 0.67	$350,000	$6,333,000
	NTC 58-2	Niagara Section-Subdivision N-6, Part 2 (Porter Ave.-Ontario St.) Project I-865(16)	(0.30) (Acc.)	Asph. Conc. Pavt. = 0.07 Mi. Misc. Work = 0.04 Mi. Including Reinf. Conc. App. Struct. 520.8' Reinf. Conc. Depressed Struct. 1313.4' Pedestrian Overpass-W. F. Beam 83.8' Span	Plans $20	
DISTRICT No. 6, J. H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Tioga	FASS 58-3	Owego-Nichols, C. R. 602 Project S-87(2)	0.30	Asphalt Conc. = 0.30 Mi. Prestressed Beam Bridge 2 Spans Total 100.5'	$7,500 Plans $2	$135,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland	TAGS 58-1	N. Y. S. Thruway-Hudson Sect.-Subd. 8A Connection to Garden State Parkway (Grotke Road)	0.03	Miscellaneous Work = 0.03 Mi. Including Bridge-Triple Reinf. Conc. Box 38' Total	$1,700 Plans $2	$31,000
Ulster	FESS 58-5	West Shokan-Peekamoose-Sundown Road, C. R. 139 Project ER-77(2)	0.10	Bit. Macadam Pavt. = 0.10 Mi. Including Comp. I Beam Bridge 61' Span	$6,500 Plans $2	$117,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	NSPRC 58-1	Northern State Parkway (Contract 2) (Long Island Expressway to Hillside Avenue)	2.07	Widening & Resurfacing Cem. Conc. Pavt. with Carbon Black 2 @ 48' Var. 1.12 Mi. Asph. Conc. Pavt. = 0.87 Mi. Misc. Work = 0.08 Mi. Including Lengthening H. G. S. (Willets Road) Reinf. Conc. Arch 65.3'	$90,000 Plans $3	$1,660,000
Bronx	FICBE 58-2	Cross Bronx Expressway, Cont. 6, (Clav Avenue to Fulton Avenue) and Various Cross Streets and Service Roads. Project I-U-1084(30)	0.45 (0.74 Acc.)	9" Cem. Conc. Pavt. with Carbon Black; 2 @ 39' Var. Width . . . = 0.38 Mi.; Sheet Asphalt Pavt. . . . = 0.69 Mi.; Granite Block Pavt. . . . = 0.05 Mi.; Misc. Work = 0.07 Mi.; Viaduct Comp. Plate Girders 1566.8'	$320,000 Plans $20	$5,863,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds.

Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: April 7, 1958.

Puerto Rico Aqueduct and Sewer Authority

Notice is hereby given that sealed bids for Section I of the San Juan Metropolitan Sewer District, the construction of the Martin Pena Sewage Pumping Station, will be received in accordance with the law by the Puerto Rico Aqueduct and Sewer Authority until three o'clock P.M. on the seventh day of April, 1958 at the office of the Authority in Santurce, Puerto Rico, and will then be publicly opened and read.

The work to be done comprises furnishing all materials and labor, tools, plant and equipment necessary for constructing, installing and completing ready for operation the Martin Pena Sewage Pumping Station, a reinforced concrete structure approximately thirty (30 m.) meters by seventeen (17 m.) meters in plan, with an initial installed pumping capacity of sixty (60) million gallons per day.

Copies of the plans and specifications may be examined without charge at the office of the Puerto Rico Aqueduct and Sewer Authority, Santurce, Puerto Rico, or at the offices of Buck, Seifert and Jost, Consulting Engineers, 223 Manuel V. Domenech Street, Hato Rey, Puerto Rico and 112 East 19th Street, New York 3, New York. Copies thereof may be obtained at the office of the Treasurer of the Puerto Rico Aqueduct and Sewer Authority, Stop 26½, Fernandez Juncos Avenue, Santurce, Puerto Rico or at the office of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York, upon deposit of cash or certified check payable to the Puerto Rico Aqueduct and Sewer Authority in the amount of Fifty ($50.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within thirty (30) days after the date on which bids are received or else the entire deposit will be forfeited.

Bids will be received only from persons who have requested the plans and specifications and made the required deposit therefore under their own names. These documents cannot be obtained later than April 4th, 1958.

Each proposal must be accompanied by a certified check or bid bond from a reliable surety company authorized to do business in Puerto Rico and satisfactory to the Authority in amount equal to ten (10%) percent of the proposal. The certified checks will be retained to pay for any damage or loss to the Authority or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The project will be financed in part by a grant-in-aid from the United States Government under the provision of Public Law 660, Water Pollution Control Act Amendments of 1956.

The Authority reserves the right to consider bids for sixty (60) days after their receipt before awarding any contract and the right is reserved to waive any informalities, and to reject any or all bids. The award will be made to the responsible bidder submitting the lowest acceptable bid, and the responsibility of the bidders will be determined by the Authority.

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
By RAFAEL V. URRUTIA
Executive Director

BUCK, SEIFERT AND JOST
Consulting Engineers

Bids: March 28, 1958.

Contract No. 2 Waste Treatment Plant

UPPER POTOMAC RIVER COMMISSION
CUMBERLAND, MARYLAND
ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of a Waste Treatment Plant in Westernport, Maryland will be received by the Upper Potomac River Commission at the Commission's office in the Liberty Trust Building, Cumberland, Maryland until 2:00 P.M., March 28, 1958, when they will be publicly opened and read aloud.

Information for Bidders, Bid Form, Schedule, Agreement, Form of Performance and Labor and Material Bond, Specifications, Plans and other Contract Documents may be examined at the office of the Upper Potomac River Commission, Liberty Trust Building, Cumberland, Maryland or at the offices of Gibbs & Hill, Inc., Pennsylvania Station, New York, New York, or the offices of Hazen and Sawyer, 122 East 42 St., New York, New York and copies thereof may be obtained upon deposit of $50.00 for each set. The full deposit will be refunded to each Bidder, and one-half the deposit to each Non-Bidder upon the return of such set in good condition within 10 days after the opening of bids. Checks will be made payable to the Upper Potomac River Commission.

A bid deposit will be required with each bid in an amount not less than five per cent (5%) of the maximum price bid for the bid schedule.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

UPPER POTOMAC RIVER COMMISSION
CUMBERLAND, MARYLAND

OFFICIAL PROPOSALS

Bids: March 20, 1958.

Millcreek Township Sewer Authority
Erie County, Pennsylvania

SEWAGE WORKS IMPROVEMENTS
DIVISION A
GLENWOOD SEWAGE PUMPING STATION
DIVISION B
GLENWOOD FORCE MAIN AND GRAVITY SEWER
DIVISION C
PITTSBURGH AVENUE SANITARY SEWERS
DIVISION D
LAKEWOOD SANITARY SEWERS
DIVISION E
PITTSBURGH AVENUE LATERAL SEWERS—AREA A
DIVISION F
PITTSBURGH AVENUE LATERAL SEWERS—AREA B
DIVISION G
PITTSBURGH AVENUE LATERAL SEWERS—AREA C
DIVISION H
RAILROAD TRUNK SEWER
DIVISION J
GLENWOOD LATERAL SEWERS
DIVISION K
KEARSARGE SEWAGE PUMPING STATION
DIVISION M
KEARSARGE SANITARY SEWERS—NORTH AREA
DIVISION N
CHESTNUT HILLS SANITARY SEWERS
ADVERTISEMENT FOR BIDS

The Millcreek Township Sewer Authority, Erie County, Pennsylvania, will receive sealed Proposals for the Construction of Glenwood Sewage Pumping Station, Division A; Glenwood Force Main and Gravity Sewer, Division B; Pittsburgh Avenue Sanitary Sewers, Division C; Lakewood Sanitary Sewers, Division D; Pittsburgh Avenue Lateral Sewers—Area A, Division E; Pittsburgh Avenue Lateral Sewers—Area B, Division F; Pittsburgh Avenue Lateral Sewers—Area C, Division G; Railroad Trunk Sewer, Division H; Glenwood Lateral Sewers, Division J; Kearsarge Sewage Pumping Station, Division K; Kearsarge Sanitary Sewers—North Area, Division M; and Chestnut Hills Sanitary Sewers, Division N, until 9:45 A.M. Eastern Standard Time on the 20th day of March, 1958, at the Millcreek Township Supervisor's Office, 2628 Colonial Avenue, Millcreek Township, Erie County, Pennsylvania. Proposals will be publicly opened and read beginning at 10:00 A.M. Eastern Standard Time at the Auditorium of McDowell High School, 3400 West 38th Street, Erie, Pennsylvania.

The Contract Documents including plans and specifications are on file and available for inspection at the office of the Board of Supervisors of the Township of Millcreek at Erie, Pennsylvania.

Copies of documents including plans and specifications required for review or bidding purposes may be obtained only from the Chairman of the Millcreek Township Sewer Authority by depositing $20.00 for Divisions A and B; $15.00 each for Divisions C, E, J and H; $20.00 each for Divisions K and N; $25.00 each for Divisions D, E, and F; and $35.00 for Division M, with the Chairman of the Millcreek Township Sewer Authority for each set of documents so obtained.

The full amount of the deposit for one set of documents and one-half of the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the Millcreek Township Sewer Authority and who also returns the plans (and specifications on additional sets) in good condition to the Chairman of the Millcreek Township Sewer Authority within ten (10) days after his bid security has been returned to him. After that date the entire deposit shall be forfeited.

Equipment manufacturers, subcontractors, and others who do not submit formal proposals to the Township of Millcreek Sewer Authority will be refunded one-half (½) of the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition to the Chairman of the Millcreek Township Sewer Authority within ten (10) days after the opening of bids. No refund will be made for documents received by the Chairman of the Millcreek Township Sewer Authority after this ten (10) day period.

A certified check or bank draft drawn on a solvent bank, payable without condition to the Millcreek Township Sewer Authority, Erie County, Pennsylvania, or a satisfactory bid bond executed by the bidder and a Surety Company in an amount not less than ten percent (10%) of the total base bid, shall be submitted with each Proposal as a guarantee that if the proposal is accepted by the Millcreek Township Sewer Authority a contract will be entered into and the performance of the contract properly secured. In addition, there shall be submitted with each proposal a bid letter from a Surety Company licensed to do business in Pennsylvania engaging to furnish the bonds required of the particular bidder upon the award of the contract.

No bid shall be withdrawn after the opening of proposals without the consent of the Millcreek Township Sewer Authority for a period of sixty (60) days after the scheduled time of closing bids.

The Millcreek Township Sewer Authority reserves the right to reject any and all bids, to reject any bids not complying with this Advertisement for Bids and the specifications, to waive any defects, informalities or irregularities in the bids received, or to accept any bid which appears to the Millcreek Township Sewer Authority to be the lowest responsible bid.

The successful bidder will be required to furnish a satisfactory Performance Bond and Labor and Material Bond in the sum of the full amount of the contract. The successful bidder will also be required to furnish a Maintenance Bond in an amount equal to one hundred percent (100%) of the full amount of the contract.

The checks and bid bonds of the three lowest bidders for each contract will be held by the Authority until proper contracts and bonds have been executed by the lowest responsible bidder in accordance with the contract documents. The checks of all other bidders will be returned within ten (10) days after the bids are opened.

Bids submitted by mail should be sent by certified mail, properly sealed, labeled "BID FOR SEWER CONSTRUCTION CONTRACT" Millcreek Township Sewer Authority, and addressed to 2628 Colonial Avenue, Millcreek Township, Erie County, Pennsylvania, Attention: Mr. James Brisbane, Secretary; but only such Proposals as are actually received by the Authority at or prior to the time fixed for the opening thereof will be considered.

The proposals shall include the furnishing and installation of all labor, materials, equipment, tools, supplies, etc., for a complete operating installation. The work to be constructed is briefly described as follows:

Division A—Glenwood Sewage Pumping Station

Consists of the construction of a Sewage Pumping Station and the installation and placing in operation of the equipment of the station.

Division B—Glenwood Force Main and Gravity Sewer

Consists of installing approximately 1,958 lineal feet of 12 inch vitrified tile sewer-pipe and 1,879 lineal feet of 10 inch cast iron force main pipe, complete with all manholes and other miscellaneous construction.

Division C—Pittsburgh Avenue Sanitary Sewers

Consists of approximately 21,000 lineal feet of reinforced concrete and vitrified tile pipe in sizes varying from 6 inches to 42 inches, and appurtenances.

Division D—Lakewood Sanitary Sewers

Consists of approximately 56,000 lineal feet of vitrified tile pipe sewers, ranging in sizes from 6 inches to 18 inches in internal diameter, and appurtenances, 16,500 lineal feet of which will replace existing severely deteriorated sewers.

Division E—Pittsburgh Avenue Lateral Sewers—Area A

Consists of approximately 22,000 lineal feet of vitrified tile pipe sewers, ranging in size from 6 inches to 15 inches internal diameter, and appurtenances.

Division F—Pittsburgh Avenue Lateral Sewers—Area B

Consists of approximately 62,000 lineal feet of vitrified tile pipe sewers, ranging in size from 6 inches to 15 inches internal diameter, and appurtenances.

Division G—Pittsburgh Avenue Lateral Sewers—Area C

Consists of approximately 60,000 lineal feet of vitrified tile pipe sewers, ranging in size from 6 inches to 15 inches internal diameter, and appurtenances.

Division H—Railroad Trunk Sewer

Consists of approximately 4,500 lineal feet of 36 inch reinforced concrete pipe sewer and 600 lineal feet of 18 inch vitrified tile pipe sewer, and appurtenances.

Division J—Glenwood Lateral Sewers

Consists of approximately 20,000 lineal feet of vitrified tile pipe sewers, ranging in size from 6 inches to 15 inches internal diameter, and appurtenances.

Division K—Kearsarge Sewage Pumping Station

Consists of the construction of a sewage pumping station and the installation and placing in operation of the equipment of the station.

Division M—Kearsarge Sanitary Sewers—North Area

Consists of approximately 4,340 lineal feet of 12 inch cast iron force main, Class 250 pipe, and approximately 21,575 lineal feet of vitrified clay pipe sewers, ranging in size from 6 inches to 18 inches internal diameter, and all appurtenances.

Division N—Chestnut Hills Sanitary Sewers

Consists of approximately 43,290 lineal feet of vitrified clay pipe sewers, ranging in size from 6 inches to 15 inches internal diameter, and all appurtenances.

Wage rates for this work shall not be less than the prescribed scale of wages as established for the Erie, Pennsylvania, Labor Market Area by the City of Erie, Pennsylvania.

Plans and Specifications for this project were prepared by Consoer, Townsend and Associates, Consulting Engineers, 360 E. Grand Avenue, Chicago 11, Illinois, and 717 Liberty Avenue, Pittsburgh 22, Pennsylvania.

MILLCREEK TOWNSHIP SEWER AUTHORITY
John F. Jageman, Chairman

Dated this 17th day of February, 1958, at Millcreek Township, Erie County, Pennsylvania.

Bids: March 25, 1958.

Contract NA-470.004

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTROL TOWER
PILES & PILE CAPS

Sealed proposals for furnishing and installing piles and pile caps for the Control Tower to be constructed at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 25, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipts shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 6, 1958

Bids: March 28, 1958.

Contract No. 1
Trunk Sewer

UPPER POTOMAC RIVER COMMISSION
CUMBERLAND, MARYLAND
ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of a Trunk Sewer running from Luke, Maryland, to Westernport, Maryland, will be received by the Upper Potomac River Commission at the office of the Upper Potomac River Commission, Liberty Trust Building, Cumberland, Maryland, until 2 P.M. (EST), March 28, 1958, when they will be publicly opened and read aloud.

Information for Bidders, Bid Form, Schedule, Agreement, Form of Performance and Labor and Material Bond, Specifications, Plans and other Contract Documents may be examined at the office of the Upper Potomac River Commission, Liberty Trust Building, Cumberland, Maryland, or at the offices of Hazen and Sawyer, 122 East 42nd St., New York, N. Y., or the offices of Gibbs and Hill, Inc., Pennsylvania Station, New York, N. Y., and copies thereof may be obtained upon deposit of $25.00 for each set. The full deposit will be refunded to each Bidder and one-half deposit to each Non-

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Bidder upon the return of such set in good condition within 10 days after the opening of bids. Checks should be made payable to the Upper Potomac River Commission.

A bid deposit or bid bond will be required with each bid in an amount of not less than five per cent (5%) of the amount of the bid.

The Upper Potomac River Commission reserves the right to waive any informalities in or to reject any or all bids.

UPPER POTOMAC RIVER COMMISSION
CUMBERLAND, MARYLAND

Bids: April 18, 1958.

Construction of Flow Units Hiawatha Treatment Plant Metropolitan Syracuse Treatment Plant District Onondaga County, New York

ADVERTISEMENT
NOTICE TO CONTRACTORS

Separate sealed bids for the construction of the Flow Units, Metropolitan Syracuse Treatment Plant District, will be received for the Onondaga Public Works Commission by the County Purchasing Agent, in Room 102, County Office Building, 600 South State Street, Syracuse 2, New York until 2:00 P.M., Eastern Standard Time, April 18, 1958. Bids will be publicly opened and read aloud in the Conference Room on the 7th floor of the County Office Building. Bids will be received for:

Contract No. 9 — General
Contract No. 10 — Low Lift Pumping Equipment
Contract No. 11 — Heating and Ventilating
Contract No. 12 — Electrical
Contract No. 13 — Plumbing
Contract No. 14 — Electrical Equipment

These Contracts are for the second major stage of construction of a 50 mgd Chemical Precipitation Sewage Treatment Plant and provide for the construction of the following:

Diversion Chamber
Screenings & Grit Building
Administration Building with office areas, and low lift pumping station and wet well
Pipe and Personnel Galleries
Two Flow Control Structures
Six Circular Flocculation and Settling Tanks, each 122 feet in diameter and 10 feet deep
Effluent Pumping Station Wet Well
Outside Piping
Modifications to Existing Structures

Bidders may submit proposals on any Contract or on any combination of Contracts but not on any part of any Contract.

Copies of the Information for Bidders and all Contract Documents, including separately bound Drawings, may be obtained only from the Onondaga County Purchasing Agent, upon deposit of fifty dollars ($50.00) per set. Any bidder submitting a sealed bid, upon returning the drawings in good condition within thirty (30) days of the award of the Contract or rejection of bids will be refunded the full amount of his deposit. Any non-bidder upon similarly returning full sets of Contract Documents, including separately bound Drawings will be refunded forty dollars ($40.00) per set.

Copies of the above described Contract Documents may be examined at no expense at the office of the Purchasing Agent, at the office of the Onondaga Public Works Commission, County Office Building, 600 South State Street, Syracuse 2, New York; at the office of O'Brien & Gere, Consulting Engineers, 400 East Genesee Street, Syracuse 2, New York; or at the office of the Syracuse Builder's Exchange, 1045 James Street, Syracuse 3, New York.

The right is reserved to waive any informalities in the bids and to reject any or all bids.

ONONDAGA COUNTY, NEW YORK
By: Robert W. Sollinger,
County Purchasing Agent

Dated: March 5, 1958

Prequalification Date: March 13, 1958.

Board of Education Bureau of Construction

Notice Re: Prequalification Forms for Contractors

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

OFFICIAL PROPOSALS

General construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures, for Public School 150, The Bronx. East 167th., Fox and Tiffany Streets. Public School 256, Brooklyn. Marcy Ave., bw't Kosciusko St. and Lafayette Ave.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, 42-15 Crescent Street, Long Island City 1, New York Room 407.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Thursday, March 13, 1958.

WILLIAM H. CORREALE
Superintendent of School Buildings,
Design and Construction
Dated: February 27, 1958

Bids: March 18, 1958

Contract LGA-332.320

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
TERMINAL AREA
BORINGS

Sealed proposals for making borings and taking samples in the terminal area at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, New York, until 2:30 P.M. on Tuesday, March 18, 1958, at which time said proposals will be opened and read in Room 1108.

Contract Documents may be seen at the office of the Engineer of Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 6, 1958

Bids: June 2, 1958.

Government of Iraq Electrification of Central Euphrates Zone

Contract No. 19—Steel Towers and Complete Erection of the Lines

The Development Board and Ministry of Development of the Government of Iraq invite tenders from qualified firms for the supply and delivery of steel towers as well as for the complete erection of 300 km of double circuit 132 kV and 66 kV power transmission lines for the Central Euphrates Zone electrical system.

Full information regarding this tender can be obtained on and after February 17, 1958 until April 28, 1958, from Embassy of Iraq—Washington or Messrs. Electrobel—Traction et Electricite, 1, Place du Troone Brussels, Belgium.

All Tender Documents are to be submitted in English to the Ministry of Development, on or before 12 noon, local time, on June 2, 1958.

Minister of Development

U. S. Government

Sealed bids for Extension to Compressor Room, Building No. 11, National Institutes of Health, Bethesda, Maryland will be received until 2:00 PM EST April 2, 1958 in Rm. 7100 GSA Regional Office Bldg., 7th & D Sts., S. W., Washington, D. C., and then publicly opened in Rm. 7100. Contractors interested in bidding the entire project may obtain two sets of bidding material without deposit; two sets by depositing $25.00 per set from Public Buildings Service, Rm. 1304 GSA Bldg., 19th & F Sts. N. W., Washington, D. C. Phone: EX-3-4900, Extn. 2397. Commissioner of Public Buildings, General Services Administration.

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 1:00 P.M. March 26, 1958 and at that time publicly opened, for the work and material required in the construction of R.O.T.C. activities facilities at Balboa, Canal Zone. The work consists of building one new masonry auditorium seating 600, complete with stage, and band, choir, rehearsal, recording rooms. Also, one new R.O.T.C. masonry building with cafeteria and appurtenant facilities. Data are available for examination in the office of Chief, Procurement Division, Panama Canal Company, 21 West Street, New York 6, N. Y. Complete sets of data may be obtained upon payment of $50.00 deposit which will be refunded if data are returned

U. S. Government

within 40 calendar days after bid opening. Telephone Bowling Green 9-5380, extension 130.

Sealed bids for construction of Biologics Standards Laboratory, National Institutes of Health, Bethesda, Maryland, will be received until 2:00 PM EST April 2, 1958 in Rm. 7100 GSA Regional Office Bldg., 7th & D Sts., S. W., Washington, D. C., and then publicly opened in Rm. 7100. General Contractors interested in bidding the entire project may obtain two sets of bidding material without deposit; two sets by depositing $35.00 per set from Public Buildings Service, Rm. 1304 GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C. Phone: EX-3-4900, Extn. 2397. Commissioner of Public Buildings, General Services Administration.

EMPLOYMENT OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Estimator—Cost Engineer—experienced in highway, structures desirable. Permanent position with medium sized growing Ohio General Contractor. P-7267, Engineering News-Record.

Designers, Bridge and Highway—3 years experience in Consultant's Office. Send resume P.O. Box 752, Providence, R. I.

Civil Engineer with field experience on concrete structures, grouting, foundations, concrete design and estimating. Frequent travel. Nationwide contractor. P-7309, Engineering News-Record.

Opportunity for young Civil Engineer with actual experience in highway engineering. Career connection with National Organization having continuing interest in highway engineering, research, and construction. Give full details first letter. P-7291, Engineering News-Record.

Wanted—Prestressed Concrete Engineer. Experience in design, production and sales promotion preferred. Facilities are in process of construction, and as a subsidiary of large corporation, will expand with the market. Send experience resume, references, starting salary and availability for a personal interview. P-7292, Engineering News-Record.

Wanted—Centrifugal Pump Designer and Engineer to develop new line of products. Small company located middle Atlantic states. Give full particulars and experience first letter and expected salary. P-7324, Engineering News-Record.

Engineer or architect experience in field supervision. Commercial, industrial or mass housing. Experience in contract supervision and purchasing, also administrative details. Younger man preferred desirous of associating with growing organization offering possible future participation. Experience, salary, references. P-7236, Engineering News-Record.

Chief estimator needed long established heavy construction corporation Pittsburgh area. State all qualifications and salary requirements. P-7383, Engineering News-Record.

Estimator Wanted—Plumbing, Heating, Mechanical Piping. Top notch, experienced man. Salary commensurate with experience and ability. Permanent position. Liberal company benefits. Air conditioned office. Submit full resume of experience to Charles Simkin & Sons, Inc., Att: S. Simkin, P. O. Box 471, Perth Amboy, N. J.—Phone Hillcrest 2-7300.

Contractor's assistant, graduate engineer, capable estimator, purchasing, to help manage a growing construction company now doing 1½ million dollar volume. Salary dependent upon experience. Location Philadelphia, Pennsylvania area. Send complete resume and salary required. P-7364, Engineering News-Record.

Architectural draftsman for office with school and church jobs to plan. Experience preferred preparing detailed plans, structural steel design, specification writing, job supervision. Permanent position for qualified man. Write P. O. Box 31, Lancaster, Ohio, giving qualifications, experience and salary, or call Lancaster 01 3-4316 for appointment.

Young man for engineering and estimating by well established general contractor doing sizable jobs in commercial and industrial field. Location—Central Pennsylvania. Give full details covering education, experience, references, salary and personal data. P-7386, Engineering News-Record.

(Continued on opposite page)

POSITIONS VACANT
(Continued from opposite page)

Assistant Engineer, 26-40, graduate, eligible for registration in New Jersey. Experience in surveys, sanitary design and municipal engineering. Permanent. Starting salary $6,500. Location: Central New Jersey. P-7392, Engineering News-Record.

Want Concrete Plant Supervisor familiar with Johnson Automatic Central Mix Plant. Please furnish references, education, experience and salary requirements. P-7387, Engineering News-Record.

Heavy Construction: Bookkeeper and Time Keeper. Submit qualifications including education and references. Must be available for interview. Reply to M. K. Craig, 121 North Main Street, Wharton, New Jersey.

Electrical Engineer—Supervision of electrical maintenance, preparation of contract specifications for electrical construction and equipment. Large medical research center desires applicants who have an electrical engineering degree from an accredited college plus 3½ years professional experience. Salary $8645 plus the opportunities, fringe benefits and protection of the Federal Civil Service Merit System. Send resume of experience and education to Personnel Officer, National Institutes of Health, Bethesda 14, Maryland.

Experienced Sewer, Grading and Paving Foremen—Steady Employment to qualified Men—Northeastern Ohio. Please reply, giving qualifications and experience, to P-7121, Engineering News-Record.

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—jira thayer jennings, P.O. Box 674, Manchester, Vermont.

The Board of Control, Ketchikan Public Utilities, invites interested persons to submit their applications to fill the position of Utility Manager. The Ketchikan Public Utilities are municipally-owned and consist of Water, Telephone and Power and Light Generation and Distribution. Applications should be addressed to Mr. R. M. Hardcastle, Chairman, Board of Control, Ketchikan Public Utilities, P. O. Box 1019, Ketchikan, Alaska.

Structural Engineer Checker, for bridges and buildings. Key man in small established organization. Salary open. F. Ray Martin Engineers, Inc., 407 N. 8th St., St. Louis 1, Mo.

Construction Superintendent for bridges etc. Steady employment to qualified man, Dakota location. Please reply P-7429, Engineering News-Record.

Traffic Engineer to head county traffic engineering staff. CE with grad work traffic. Min 1 yr exp respn chge traffic engr. Duties traffic studies, plans for signals, signs etc. Formal app sent to those who qualify. Mail brief resume to P-7436, Engineering News-Record.

Sales Engineer to introduce outstanding product in sanitary and water supply fields. Young, aggressive, well-financed company. Salary open. Location: Southeast. P-7437, Engineering News-Record.

Civil Engineer—22 to 35—New York area— for office, field, and possible eventual sales work with dewatering and soils stabilization company. Some travel. Send resume to P-7394, Engineering News-Record.

Civil Engrs., Bridge Designers, Draftsmen. Design work. Steven Antonoff Cons. Engrs., 806 Park Ave. Bldg., Detroit 26, Mich.

City Engineer—Civil Engineer, Graduate engineer, 5 yrs municipal engineering experience. Registered Engineer. Salary Open. Apply City Manager, Minot, North Dakota.

Young Man—(30-40)—Civil Engineer for costs, layout, expediting and co-ordinating the construction of bituminous road work. Car furnished, steady employment and advancement, wages commensurate with ability. Write Box 120, Haverstraw, New York.

POSITIONS WANTED

Canadian Consulting Engineer, civil, seeks short term foreign jobs. Salary or fee basis. PW-7025, Engineering News-Record.

Superintendent — Highway construction, grading, bridges and pavement. Complete charge of projects. Reply PW-7269, Engineering News-Record.

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work

Civil Service Opportunities
Selling Opportunities Wanted
Selling Opportunities Offered

Employment Agencies
Employment Services
Labor Bureaus

DISPLAYED ———**RATES**——— **UNDISPLAYED**

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$2.40 per line, minimum 3 lines. To figure payment count 5 average words as a line.
Position Wanted ads are ½ of above.
Box Numbers—counts as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW ADS or inquiries to Classified Adv. Div. of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36, N. Y. March 20th Issue Closes March 10th.

POSITIONS WANTED

Project Manager—seeking position leading to top management or participation in ownership. Age 32, married. Grad. C.E., Lic. Prof. Engr. NYS. 8 yrs intensified experience in Gen. Constr.. Thorough knowledge bid to completion, used to heavy responsibility and have fine record of successfully completed projects, currently employed. PW-7220, Engineering News-Record.

Consulting Civil-Hydraulic-Irrigation — and Drainage Engineer available for foreign assignments varying from one month to six months duration. Professional Record-Rates of Pay and References Furnished to Interested Clients. PW-7241, Engineering News-Record.

Architectural civil spec. writer inspector, graduate engineer, ten years experience. PW-7272, Engineering News-Record.

Construction Manager: 15 years sound experience, Exec. Ability, Engineering and Field Supervision, Estimating, Expediting. Industrial and Power Plant Building Construction and Mechanical Installations from customer contact to completion of projects. Desire permanent connection with Engineering and Construction Firm or expanding Utility. PW-7263, Engineering News-Record.

Mechanical Supt., asst. Job Supt. Industrial, Chemical, Power Plants, Refineries. Age 42—South, Southwest, Foreign. PW-7300, Engineering News-Record.

Superintendent (carpenter) Formwork, reinforced concrete, bridges, hospitals, railroad terminals, schools, treatment plants, 11 years general construction supervision experience. Age 35. Will locate Los Angeles California vicinity. PW-7388, Engineering News-Record.

Civil Engr., B.S. 29. Single seeks responsible position in South America. 5 years experience heavy construction, design, and field work in S.A. and U.S.A. Fluent Spanish and English. PW-7331, Engineering News-Record.

Construction Engineer Superintendent on Industrial, Commercial, Bridge Projects desires change. Presently employed as General Superintendent of all company projects. Prefer Far West or South West, permanent location. PW-7360, Engineering News Record.

Structural Engr. registered, 30. Experienced in building design, steel and concrete, lift-slab. Desire responsible design with Southern consultant, preferably Fla. PW-7361, Engineering News-Record.

Mechanical Supt. 20 yrs experience just returned from 3 years overseas. Wishes another overseas assignment, top references. PW-7363, Engineering News-Record.

Construction Supt.—BSCE, 40, 20 years exp., now employed, desires job with general contractor. Field supervision, scheduling, labor relations, cost analysis, direction of subcontractors on industrial and chem. plants and public buildings. PW-7356, Engineering News-Record.

Civil Engr., BSCE, Reg. in Pa., 31, 8 yrs. divers. exp., 3½ foreign, on const., design, estimating, layout of indust. bldg., railroad, earthwork, etc., seeks position in warm climate, pref. Florida. Pres. Salary 8,000 plus. PW-7369, Engineering News-Record.

Construction Superintendent now employed desires job with general contractor on estimating, sub-contractors, shop drawings, scheduling, costs, etc. PW-7034, Engineering News-Record.

POSITIONS WANTED

Construction Supt. General Constr. PW-7186, Engineering News-Record.

Engineer, grad., registered, business trng. Experienced steel fabricating, sales, production. Able to assume overall management responsibility. PW-7423, Engineering News-Record.

Equipment Superintendent-Master Mechanic experienced in the supervision of all phases of shop management, repairing, maintenance and operation of large fleets of earth moving equipment, paving spreads, erection of asphalt or concrete plants. Presently nearing completion of contract in middle East Country, best of references, resume on request. PW-7428, Engineering News-Record.

Civil Engineer—age 26—2 years experience — wishes to work overseas — preferably Europe—write to PW-7415, Engineering News-Record.

Foreign Assignment—Civil Engineer available for assignment—preferably Europe, Far or Middle East. 10 years experience, concrete, steel design, construction, harbour work, dredging. Speaks English, French and Spanish. PW-7431, Engineering News-Record.

Civil Engineer, age 33, B.S.C.E. Twelve years experience that includes office procedure, drafting, surveying, building construction, electrical distribution, steel design, and hwy. field construction. Desire a permanent position in construction engineering with responsibility and future possibilities. Excellent references. Preferable location—Northeast U.S. section. PW-7433, Engineering News-Record.

Structural engineer, presently employed by construction company, desires position in sales or estimating with an opportunity to earn a commission on the business that is brought in. Prefers Chicago area. PW-7426, Engineering News-Record.

General Supt. or Project Manager: Age 34. Experience in all phases of Heavy Construction and Equipment including Highways & Dams. Able to assist in estimating and bidding. Seeking permanent position with reliable concern only. Available Mar. 1. PW-7427, Engineering News-Record.

SELLING OPPORTUNITY WANTED

Consulting Civil Engineer, office in South Florida desires to represent national engineering firm in Florida and Caribbean area. RA-7422, Engineering News-Record.

WORK WANTED

Structural drafting, shop drawings, computations, models, perspectives. Alexander's, 310 Turner Place, Ithaca, N. Y.

Structural Steel detailing by experienced northeast Ohio firm with P.E. WW-7434, Engineering News-Record.

Structural Designers P.E.'s, contract or per diem, your office or ours, N.Y.C. WW-7390, Engineering News-Record.

Don't forget the

BOX NUMBER

When answering the classified advertisements in this magazine don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

STRUCTURAL
ENGINEERS
DESIGNERS
DRAFTSMEN

Prefer several years or more experience in any of these fields:

BRIDGES

BUILDINGS
EXPRESSWAYS
HYDRO PROJECTS
TEST FACILITIES*

Will consider lesser experience with good educational background, including several recent graduates to round out a planned expansion program. Occasional openings for combination field men. These are permanent additions to our regular staffs.

We are professional engineers engaged primarily in design which covers a wide scope of practice. The variety and unusual character—for example, the proposed world's largest bridge project—offer excellent opportunity for professional development and advancement.

Immediate openings in our St. Louis general offices and occasionally in our San Francisco branch office. Confidential interviews can also be obtained at Washington, D.C., and Portland, Oregon.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.
ENGINEERS — ARCHITECTS
915 Olive St. Louis 1, Mo.

*We are designers of the technical facilities for the Arnold Engineering Development Center, operated by our subsidiary, ARO, Inc.

SALES REPRESENTATIVE

or dealers wanted to sell concrete saw blades direct to road-builders and general contractors. Tremendous repeat sales . . . high commissions . . . provide an exceptional opportunity if you are now selling to concrete paving contractors. Submit complete data including territory covered. All replies confidential.

RW-7347, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS
DESIGNERS

McKee has permanent openings at their Cleveland, Ohio, offices for men with at least 3 years' experience in any of the following:

Oil Refineries
Blast Furnaces
Steel Mills
Industrial Plants

In the following categories:

Piping Checkers
Process Piping
Piping Layout
Concrete
Structural
Electrical
Mechanical
Pressure Vessel
Mechanical Equipment
Specifications
Instrumentation
Estimators

Broad diversification of work in our 3 engineering divisions assures you security of employment.

Send detailed resume to
G. VICTOR HOPKINS

ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-3223, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

CHIEF ENGINEER - - -
EXPRESSWAYS PLANNING

Location Southwest. Duration immediate assignment minimum 2½ years. Must be registered engineer with broad experience in freeway, expressway, highway design and construction, capable of taking full engineering responsibility for design of multi-million dollar urban expressway projects. Salary $12,000 to $15,000 per year. State education, chronological experience and salary record, salary expected, references and when available.

P-7405, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to
Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in middle Atlantic states. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

SW-4684, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

- Leading excavator account requires two energetic men for New York area.
- Excavator experience not imperative but contacts essential.
- State experience and whether salary or commission preferred.
- Outstanding earning opportunity for right man.

P-7408, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SUPERINTENDENT

General Contractor will add to expanding organization man qualified for large projects run independently of main office. Should be thoroughly experienced in both field supervision and estimating to handle smaller jobs, as is sometimes necessary, with minimum of field help. Man wanted is not the "Project Manager" type, but one not afraid of the hard work required to meet costs on lump sum contracts. Well paid and continuous employment. Work generally in Eastern half of this country. Give full resume in reply, particularly records of cost and schedule compliance.

Blount Brothers Construction Company
P. O. Box 949 Montgomery, Alabama

ASSISTANT SUPERINTENDENTS OR FOREMEN

Two or three assistant superintendents or foremen required for company in midwest. Must have engineering background capable of maintaining precise construction records and handle group of thirty men. Mostly transmission line work. Must be good pushers for work in field and have good construction and engineering background. Top opportunity with large company. Permanent salary to $10,000 for right party. Reply with full details to:

P-7248, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STEEL FORMS

Sales engineer to promote forming systems for concrete construction with architects, engineers, contractors, govt. agencies. Extensive experience in forms design, estimating, sales and field work necessary. Send resume.

P-7406, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

To EMPLOYERS Who Advertise for MEN:

Frequently, when there are many applicants for a position, only the most promising letters are acknowledged. The other applicants never know whether their letters reached a prospective employer or not. These men often become discouraged, will not respond to future advertisements and even question their bona fide character.

Every Advertisement Printed Is Duly Authorized.

You can help keep our readers interested and get better returns to your advertising in this section if you acknowledge each reply—in plain envelopes, if you wish.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.

"Put Yourself in his place."

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — **EQUIPMENT — USED or RESALE**

ELECTRONIC COMPUTATIONS

Bendix G-15 computer available on service bureau basis for engineering computations.

- Earth work, traverses, highway geometrics
- Stress analysis, bridge design
- Hydraulics
- Traffic analysis

Programming available for other applications. For full information write to:

H. W. LOCHNER INC.
COMPUTER DIV.
20 N. Wacker Drive Chicago 6, Illinois
FRanklin 2-7346

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

BUSINESS OPPORTUNITIES

S.E.C.M.O. Corp. Consulting Engineers. Concrete and Prestress Design (All Systems). Water works & Industrial Hydraulics—Earth Dams & Embankment Design—Bridges and Plants. S.E.C.M.O. Corp. wishes enter in touch with American Consult. Engineers in order to set up collaboration. 83, rue de Villiers—Neuilly s/Seine—(France).

Wanted Business Opportunity—Civil Engineer 33—10 years construction experience desires opportunity to purchase construction company or equipment from profits of business. BO-7416, Engineering News-Record.

FOR LEASE

Approximately 400 sq. ft. available in architects office for independent structural engineer. Frequent work available. Possible future association. 160 E. 56 St., New York. Phone Plaza 1-2465.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

Need A "Lift"?
CRANES, INC.
RENTALS
Manitowoc 3900's — Crawlers 3500's
Latest Models
Long Booms and Jibs
TRUCK CRANES
Link Belt and Bay City. Cap. to 35 Tons. Booms to 150 ft. Hoists-Welders-Generators
Maspeth 78, N. Y. ST 4-1776

LOCOMOTIVES
BLOWER — HOLE DRILLS

Two 80 ton and one 25 ton G. E. Diesel-Electric Locomotives. Like new—built 1955. 42" track gauge, will alter to suit.

One Ingersoll-Rand Motor Blower, Type FS—never used.

Four Blast Hole Drills, Bucyrus Erie 42 T Electric, with accessories. In good operating condition.—Bargain price.

COALDALE MINING COMPANY, INC.
Lansford, Pennsylvania
Lansford 1619

NEW AND REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

FOR SALE
MANITOWOC MODELS 3500 & 3900
Liftcranes
Forsythe Equipment Co., Inc.
37-11 Vernon Blvd.
Long Island City 1, N. Y.

FOR SALE
8" DREDGE
18' x 35' hull, Georgia pump, G. M. 6-71 and G. M. 2-71, 500' of pipe, excellent condition.
COAST DREDGING CORP.
Box 22 *Phone AXtel 6-2479* Tuckerton, N. J.

CRANE—MOBILE
Link Belt Speeder
Model YC-9, 10 ton capacity at a 5' radius, 4-wheel, solid tires, gasoline engine, magnet controller attachment.
Will consider any reasonable offer. Contact **JAMES REARDON, 4300 Wyoming, Dearborn, Michigan—LUzon 4-3500.**

PIPE
Surplus New & Used
FOR SALE

ALBERT PIPE SUPPLY CO., INC.
PILING • PIPE • CULVERTS • VALVES & FITTINGS
ASBESTOS CEMENT PIPE • ALUMINUM PIPE
103 VARICK AVE., BROOKLYN, N. Y. • HY 7-4900

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT PIPE SUPPLY CORP.
Bogart and Stagg Streets, Brooklyn, N. Y.

CRANES FOR RENT

CRAWLERS — Capacities to 60 tons Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons Booms to 130 ft.

P and H, Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

DERRICKS

FOR SALE

2—100 TON STIFF-LEGS
1—125 TON STIFF-LEG
2— 45 TON STIFF-LEG
1— 25 TON STIFF-LEG
1— 10 TON STIFF-LEG
2— 5 TON STIFF-LEG
1— 65 TON GUY DERRICK
1—200 TON GUY DERRICK
2—300 TON TWIN POLES
6— HOISTS
Many others

WANTED
2—250 TON GUY DERRICKS WITH 250 HOISTS

NATIONAL EQUIPMENT COMPANY
BLOOMINGTON, INDIANA PHONE 5188

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent
Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.
A complete line of Engineering Instruments and equipment for field or office. Write for Catalog NLR 83.
WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

ALL MAKES
RE-BUILT REPAIRS RENT REAL EXPERTS
BUFF
69 Day St., New York WOrth 2-2797

GURLEY
FACTORY REPAIRS
Send your instrument directly to Gurley for repair, rebuilding, adjustment.
Write for "Repair Service" leaflet plus 20-page "Surveyor's Notebook Tips."
W. & L. E. GURLEY
Dept. R, Troy, New York

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8"	BP	36#
10"	BP	42#
12"	BP	53#
14"	BP	73#
14"	BP	89#
14"	BP	102#
14"	BP	117#

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Call HY DRACHMAN
STEEL CORPORATION
52-25 2nd Street
Long Island City, N.Y.
Phone: RAvenswood 9-1262

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 — 37-11 Vernon Blvd.
Long Island City 1, New York

SALE — RENTAL

1957 Koehring Model 305
Three-quarter yard crawler combination shovel-clamshell-dragline with General Motors Diesel Engine, 65-ft. boom, 24 in. shoes, 90-day warranty. $27,000.00

FRANTZ EQUIPMENT COMPANY
50th & Wynnefield Avenue, Philadelphia 31, Penna.
GReenwood 7-7200

RENTAL and SALE of

PILE HAMMERS & ACCESSORIES

Steam, Gasoline and Diesel Cranes
Steam Generators—Compressors
Pile Extractors

Distributors for Vulcan Iron Works, Inc.

HOWARD W. READ CORP.
4603 N. 4th St., Phila., Pa.
Tel. GLadstone 7-0700

FOR RENT

3900 MANITOWOC LIFTCRANE

Only 9 months old—in excellent condition—70 ton capacity—160 foot boom—30 foot jib—torque converter and manual control—located in western Pennsylvania—will move anywhere on long term lease.

STANDARD STEEL SERVICE, INC.
P. O. Box 929, Johnstown, Pa.
Phone 37-8451 or 37-7901

FOR SALE

16" Diesel Elec. Dredg. self-propelled with—
1500 Ft. Pontoon Line—Cannot be used in U.S.
1—300 Slow Speed Motor
1—12" Pump
1—24" Pump

H. P. GUION
DREDGES
6050 Riverdale Ave., New York 71, N. Y.

FOR SALE

1—Single Drum Hoist Ottumwa 150 H.P.—2300 volt—60 cycle—3 phase
1—55' Headframe for 2 comp. shaft.
3—21—Eimco Tunnel Muckers—24" gauge
20—2½ cy. Watt Muck cars, side dump 24" gauge with "Can't-Miss" Couplers
5500'—of 18" Naylor Fanline with Couplings
1—Jeffrey Pan Feeder
4—Canton Car transfers, for 24" gauge track

FRAZIER-DAVIS CONST. CO.
1319 Macklind Ave. St. Louis 10, Mo.
Ph. ST. 1-1950

PILING

SURPLUS NEW and USED — **For Sale, Wanted or Rent**

We do a Nation-wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
322 pcs. 60 to 30 ft. M-115 and M-116—Illinois
258 pcs. 50 ft. ZP-32—Maryland
241 pcs. 48 ft. MZ-27—Louisiana
76 pcs. 30 to 28 ft. M-112—Florida
67 pcs. 30 to 20 ft. M-116—Wyoming

Other Lengths & Sections at Various Locations, including Storage Yards at CHICAGO & BUFFALO

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. — CHestnut 1-4474

STEEL SHEET PILING IN FLA. & LA.
400 pcs. 15' CORRUGATED PILING
1136 pcs. LARSSEN II 20', 25', 30' & 40'
367 pcs. CARNEGIE MP 115-30', 35', 40'
448 pcs. MZ32-MZ27—50' & 60'
HAMMERS & EXTRACTORS
7 MCK-TERRY 9B3 NO. 7 10B3 S5 NO. E4
Vulcan 440A 800A 1200 EXTRACTORS
SEABOARD STEEL CORP.
4521 South Tamiami Trail — Sarasota, Florida
Telephone Ringling 7-0461

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
330	MP-116	45 to 60 ft.	Chicago
300	MP-115	50 to 60 ft.	Chicago
210	MP-112	19 to 21 ft.	Kansas
157	MP-116	27 to 34 ft.	Colorado
262	MP-101	34 to 35 ft.	Nebraska
125	MP-116	19 to 24 ft.	Kansas City
160	MP-115	23 to 25 ft.	Missouri

CONMACO, INC.
PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

H & STEEL SHEET PILING

4800 PCS. BETH. SP6, A65' 50' 56' & 48'
264 PCS. MPI12—40' & 60'
447 PCS. BETH. AP 3—25 & 30, 40 & 60 FT.
416 PCS. BETH.—DP2—31' 40' 50' & 64'
536 PCS. BETH.—ZP32—25' 36' 48' 55' & 62'.
218 PCS. CARNEGIE MZ27—48 FT.
1500 PCS. BP12—BP14—55'-60'
300 PCS. 15' Corrugated Piling

PILING BOUGHT—SOLD—RENTED
STOCKS N. Y.—MASS.—TEX.—OHIO
GA. & QUE.

PILE HAMMERS & EXTRACTORS
Vulcan 1200, 800 & 400 Extractors
13 McK-Terry, 6, 7, 9B3, 10B2 & 11B3

4 GANTRY WHIRLEY CRANES
25 R-Amer. 75' Gantry 165' Boom
20 R-Amer. 60' Gantry 139' Boom

R. C. STANHOPE, INC.
60 E. 42nd St. — N. Y. 17, N. Y.

STEEL SHEET PILING

LARSSEN and ROMBAS Sections

STOCKS AVAILABLE IN:
- Linden, New Jersey
- Ft. Lauderdale, Florida
- Houston, Texas

WESTERN SERVICES CORPORATION
601 E. Linden Ave., Linden, N. J.
MArket 4-4000 — HUnter 6-4000

In Florida Call: Port Everglades Steel Co. Ft. Lauderdale—JA. 4-6545
In Houston Call: G. Oliver—CA. 4-7234

RENT STEEL SHEET PILING

Get the exact lengths and sections you need of all standard sections, delivered *on time*—and at Foster's usual low rental rates.

H-BEARING PILE
PIPE FOR PILING
LIGHT-WEIGHT STEEL PILING
PILE HAMMERS & EXTRACTORS

L.B. FOSTER Co.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

STEEL SHEET PILING—*FOR SALE AND RENT*

3000 pcs. Beth SP-6a 40' to 56'—practically new

Attractively priced—prompt shipment from New York State

a joint venture of

WHISLER STEEL PILING CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo.
CHestnut 1-4474

CONMACO, INC.
820 Kansas Ave.
Kansas City 5, Kans.
DRexel 1-3930

R. C. STANHOPE, INC.
60 East 42nd St.
New York 17, N. Y.
Murray Hill 2-3075

Phone or write any of the above

A LARGE AUCTION
CONSTRUCTION EQUIPMENT
MONDAY, MARCH 31, 9:30 A.M.
COLUMBUS, OHIO

LOCATION: The sale will be held at the Columbus Branch yard of the RISH EQUIPMENT COMPANY at 3131 Beulah Road, just 4 miles from Downtown Columbus.

NOTE: The RISH EQUIPMENT COMPANY, (International Dealers with branches at 14 locations in Ohio, Virginia and West Virginia), is selling a large portion of its used equipment inventory in this Auction. Each and every piece of equipment in the sale belongs to Rish Equipment Co. Many of these equipment items have been completely rebuilt at the unique Rish Assembly-line rebuilding shops at Princeton, W. Va.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!

Approximately 275 equipment items will be sold, including the following categories:

Approx 25 Air Compressors. 60 cf to 365 cf.
Approx 6 Ditching and Trenching Machines
Approx 13 Power Units
Approx 37 IHC Tractors & Crawler-Loaders. T-6; TD-6; T-9; TD-9; TD-14; TD-18; TD-24.
Approx 20 Cat Tractors. D-2; D-4; D-6; D-7; D-8.
Approx 8 AC Tractors & Crawler-Loaders. HD-5; HD-6; HD-9; HD-19; HD-20.
Approx 7 Other Crawler Tractors & Loaders. Oliver; Terra-Trac; J. D.
Approx 9 Hough Payloaders. Nearly all sizes.
Approx 11 Motor Scrapers & Pull Scrapers.
Approx 19 Wheel Tractors. Many with Loaders and Backhoes.
Approx 10 Cranes, Draglines & Truck-Cranes. Also Attachments & Buckets.
Quantities of other items including Graders; Bucket Loaders; Forklifts; Generators; Rollers; Mixers; Trucks; PCU's; Vibrators; Pumps; Saws; Heaters; Hoists; Winches.

WRITE-WIRE-CALL Auctioneers for complete Descriptive List that will Include All Items to be Sold. INSPECT the equipment the week prior to sale date at the sale site.

NOTICE: In this sale, as in all Forke Brothers Auctions, each piece will positively be at the sale and each piece will positively sell to the highest bidder without 'Buy-Backs', 'Bid-ins', or any other subterfuge. This is a completely honest and legitimate Auction and neither the Rish Equipment Co., The Auctioneers, nor any of their representatives will bid on any item! ! !

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!

If you are in need of any of the above categories of equipment, do not fail to contact the Auctioneers for a complete, descriptive list. This is a fine opportunity to purchase a wide variety of very good heavy equipment items at auction. Attend the sale prepared to buy!!

RISH EQUIPMENT COMPANY (International Equipment Dealer) Owner

FORKE BROTHERS
the Auctioneers

321 Sharp Bldg. **Lincoln, Nebraska** Phone 2-1048

— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT or BUY

FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS

FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

RAILROAD Cross and Switch **TIES**
Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky.

RAILS - TIE PLATES
Frogs & Switches—Track Accessories
W. H. DYER CO., INC.
Operating Nationally
2110-X Railway Exchange Bldg., St. Louis 1, Mo.

RAILS
NEW — RELAYING — TRACK ACCESSORIES
MIDWEST STEEL CORP.
502 DAYDEN STREET
CHARLESTON, W. VA
IMMEDIATE DELIVERY

FOR RENT

Manitowoc Cranes

Models 2000-B, 3500 or 3900. 25 to 70 Ton Capacity—50' to 125' booms — 20' or 30' jibs — manual controls — independent booms — torque converters.

McCARRICK BROTHERS, INC.
1700 E. Ridge Pike P. O. Box 291
Norristown, Pa. Phone: Broadway 2-4231

Whirley Cranes, Dredges, For Sale

Washington 50 ton Whirley elec. crane
American 65 and 50 ton Revolver cranes
Clyde 30 ton elec. Whirley pier crane
Revolving 100 and 30 ton pier cranes
Dredges, 18", 16" hydraulic, diesel, steam
Dredge, dipper, 3½-4 yd. steel, steam

H. Y. SMITH CO.
828 N. B'way Milwaukee 2, Wisc.

FREE

Latest list of used construction and industrial equipment. Shows PRICES and complete description. Send for your copy today.

SPECIAL

MICHIGAN C16 BACKHOE—$7650.00

2020 Erie Ave. BA. 9-1950 Phila., Pa.

SERVICE SUPPLY CORPORATION

PILE DRIVING CRANES AND EQUIPMENT

FOR SALE

3500 Manitowac, 1949, 16' 10" Crawlers, Crane-Dragline, Cat D-17,000

802 Lima, 1950, Long and Wide Crawlers, Crane-Dragline, Cat D-17,000

750 Lima, Long Crawlers, Buda Diesel Engine, Attractive Price

650 Lima, Hoist Crane, 110' Boom and 20' Jib, Cat D-13,000

KA-MO Augers, Pile Driving Leads 75 Horse Power Boilers and Other Pile Driving Equipment

CANDLER-RUSCHE, INC.
8145 Medina Street
Detroit 17, Michigan
VInewood 2-3384

FOR SALE OR RENT

40 ton American Diesel Loco. Crane
65 ton Whitcomb Diesel Elec. Loco.
44 ton Whitcomb Diesel Elec. Loco.
25 ton Davenport Gas-Elec. Loco.
50 ton Amer. Guy Derrick, 115' Mast, 100' Bm.
90 HP Lidgerwood 2d Diesel Hoist w/Swinger
150 HP Amer. #140 3d Gas Hoist & Swinger
1½ yd. Lima 602 Diesel Crane. 110' Boom.
60 ton Manitowoc 3900 Erection Crane. 140' Bm.
110 HP Clayton Port. Steam Generator

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

PROFESSIONAL SERVICES

NEW ENGLAND

Jackson & Moreland, Inc.
Engineers and Consultants

Design and Supervision of Construction
Reports — Examinations — Appraisals
Machine Design—Technical Publications
Boston New York

Metcalf & Eddy
ENGINEERS

Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

MIDDLE ATLANTIC

John Brumbaugh & Associates
CIVIL ENGINEERS

Highways Parking
Drainage Site Planning
Surveys Reports

Mahwah, N. J.
LAfayette 9-2060

Edwards and Kelcey
Engineers and Consultants

Highways—Structures
Traffic—Parking
Terminal Facilities
3 William St., Newark, New Jersey
Boston New York Baghdad

John Clarkeson
Consulting Engineer

Civil Engineers—Consulting Services
Highways, Airports, Bridges,
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.,
Albany, N. Y.

E. Lionel Pavlo
Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

King & Gavaris

CONSULTING ENGINEERS

Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction

425 Lexington Ave. New York 17, N. Y.

Severud-Elstad-Krueger-Associates
Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Ave., New York 17, N.Y.

D. B. Steinman

Consulting Engineer

BRIDGES
HIGHWAYS
Design, Construction
Strengthening, Investigations,
Reports, Advisory Service
117 Liberty St., New York 6, N. Y.

CONSULTANTS!

This section provides you with a dignified, ethical means of presenting your specialized services to key men in engineering.

Lockwood, Kessler & Bartlett, Inc.
Engineers *Surveyors*

Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Robert W. Lowry, Inc.
Consulting Engineers

Robert W. Lowry M. Lepkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Stress Analysis & Strengthening
227 Pine Street, Harrisburg, Pa.
122 E. 42nd Street, N. Y., N. Y.

Pennsylvania Drilling Company

Subsurface Explorations. Grouting.
Industrial Water Supply.
Mineral Prospecting.

Large Diameter Drilled Shafts. Reports
1205 Chartiers Ave. Pittsburgh 20, Pa.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.
Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling.
Main Office
221 W. Olive Street, Scranton, Pa.
Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa.
575 Linwood Ave., N. E. Atlanta, Ga.
Box 645—Grand Junction, Colorado
Buchans, Newfoundland

Buchart Engineering Corp.
Engineers

Highways — Bridges — Toll Roads
Sewerage — Industrial Waste and Disposal — Water Works — Surveys — Reports — Design — Supervision — Consultation — Industrial — Municipal — Structures
411 W. Market St., York, Pennsylvania

SOUTH

Dignum and Associates
ENGINEERS

Civil Electrical
Structural Mechanical

260 Palermo Avenue
Coral Gables 34, Florida

Rader and Associates
Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations.
111 N.E. 2nd Avenue, Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

Roy B. Everson
S.E. Consultant Since 1900

For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems. A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Mobile Drilling & Engineering Inc.
Foundation Engineering & Testing Division—Contract Drilling Division

Foundation Investigation, Analysis & Design—Earth Dam & Embankment Design—Pavement Design—Compaction Control—Soil Sampling & Testing—Core Drilling.
960 N. Penn. Ave., Indianapolis 4, Ind.

Toledo Testing Laboratory
Engineers—Chemists

Concrete — Soils — Asphalt

Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling
Load Tests
Soils Mechanics Laboratory

1810 North 12th Et. Toledo 2, Ohio

Photronix, Inc.

offering an integrated process of
AERIAL PHOTOGRAMMETRY
AND
ELECTRONIC COMPUTATION
For Engineers, By Engineers
790 King Ave. Columbus 12, Ohio

FAR WEST

Woodward-Clyde-Sherard & Assoc.
Consulting Civil Engineers

Soil and Foundation Engineering; Earth Dams; Engineering Geology; Highway and Airport Pavement Design
1150 28th Street, Oakland, California
1240 West Bayaud, Denver, Colorado
310 V F W. Bldg., Kansas City, Mo.
4815 Dodge Street, Omaha, Nebraska

ALWAYS READY

Yes, these consultants are always ready to help you with any problem concerning engineered construction. Call on them with the assurance that you will be receiving the finest of professional advice.

INSPECTION & TEST

Richardson X-Ray Service
a corporation

Field X-ray, Gamma ray Inspection of Penstocks, Pipelines and related welded structures.
World Wide Service
617 S. Raymond Ave. Alhambra, Calif
Cu 3-1167

The Haller Testing Labs., Inc.

140 Cedar St., N. Y. 6, N. Y.
Testing and Inspection of Construction Materials for: Expressways—Airports Structures—Bridges
Complete Soils Laboratory
Test Borings—Load Tests
Boston Plainfield, N. J. New Haven

AERIAL PHOTOGRAPHY

Clyde E. Williams & Assoc., Inc
Aerial Photos - Enlargements
Topographic Maps

As large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind

AERIAL SURVEYS

Aerial Map Service Co.

Topographic, Planimetric, Photo Maps for Highways, Mining, Resources Construction, City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements, Triangulation Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa

American Air Surveys, Inc.

AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile inventories
907 Penn Ave. Pittsburgh 22, Pa.

SURVEYORS

Alexander Milyko, P.E. & L.S.

Surveying parties, available for any location—Contract or per diem basis.
1124 New York Ave. Huntington Sta., L. I., New York

TRANSLATION

MARIO W. GAMALERO
Civil Engineer

PROFESSIONAL SPECIFICATION TRANSLATION
English—Spanish
Spanish—English
9na Calle "A" 4-70, Zona 1
Apt. Postal 293 Guatemala City, C.A.

CONSULT THESE SPECIALISTS . . .

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

weekly insertion for	per quarter 6 mos.	12 mos.
small unit	144.90	134.85
large unit	233.90	227.70
bi-weekly insertion		
small unit	82.80	72.45
large unit	134.95	124.20

ADVERTISERS IN THIS ISSUE

Acker Drill Co, Inc. 102
Aetna Life Affiliated Co. 89, 107
Allis Chalmers Mfg. Tractor Div. 70-71
Allison Div. GMC 87
Aluminum Co. of America 54-55
American Vitrified Products Corp. 5
Armco Drainage & Metal Prod. Inc. 59
Atlas Copco 11
Atlas Powder Co. 130

Baldwin Lima Hamilton Co. Lima Div. 106
Barco Mfg. Co. 103
Belmont Iron Works 106
C. L. Berger & Sons, Inc. 85
Bethlehem Steel Co. 33
Blaw Knox Co. Construction Equip. Div. 65
Brainard Steel Div. 9
Bros Incorporated 53
Butler Mfg. Co. 56
A. M. Byers Co. 2nd Cover

J. I. Case 141
Chevrolet Motor Div. GMC 134-135
The Cleveland Trencher Co. 88
Clipper Mfg. Co. 137
Concrete Reinforcing Steel Institute 93
Continental Motors Corp. 142
Contractors Service Ltd. 127

Richard Dudgeon Inc. 108
Allen B. DuMont Lab, Inc. 58

Economy Forms Corp. 122
Ellicott Machine Corp. 115
Esso Standard Oil Co. 125

Filotecnica Salmoiraghi, Inc 107
Ford Motor Co. Truck Div. 60-61

Garrett Corp. 109
General Motors Corp. Truck & Coach 96-97
B. F. Goodrich Tire Co. 6-7
Goodyear Tire & Rubber Inc. 1
Griffin Wellpoint Corp. 112
Gunite Concrete and Construction Co. 106

Hendrix Mfg. Co., Inc. 83
Hyatt Bearings Div. GMC 22

International Harvester Co. (Constr.) 10, 13, 14-16
Irving Subway Grating Co. 43

Jaeger Machine Co. 46
Jenkins Bros. 20
C. S. Johnson Co. 129
Joy Mfg. Co. 98

Keasby & Mattison Co. 49
Koehring Co. 128

LeRoi Div. Westinghouse Air Brake Co. 116
LeTourneau Westinghouse Co. 34-39
Link Belt Speeder Corp. 4
Ludlow Valve Mfg. Co., Inc. 75

Manitowoc Engineering Corp. 105
Marion Power Shovel Co. 72
Master Bldrs. Co. 3rd Cover
Mayo Tunnel & Mine Equipment 121
McGraw-Hill Book Co. 117
McKiernan Terry Corp 121
McKinney Drilling Co. 104
Miller Electric Mfg. Co., Inc. 104
Mississippi Valley Equip. Co. of St. Louis 102
Moretrench Corp. 122
Mueller Co. 77-80

National Gypsum Co. 90
National Supply Co. 76
Naylor Pipe Co. 95
New England Carbide Tool Co. 118
Northwest Engineering Co. 3

Olin Mathieson Chemical Corp. Film Div. 17
D. W. Onan & Sons, Inc. 52
Owen Bucket Co. 143

Page Steel & Wire Div. Amer. Chain & Cable Co. 100
Patent Scaffolding Co. 69
Phoenix Bridge Corp. 104
Portland Cement Association 101
Presstite-Keystone Engineering Prods. Co. 123

Republic Steel Corp. 44-45
Rockford Clutch, Div. Borg Warner Corp. 120
Rust-Oleum Corp. 19

Sauerman Bros. Inc. 48
Simpson Logging Co. 8
Superior Lidgerwood-Mundy Corp. 102
Symons Clamp & Mfg. Co. 2

Tapecoat Co. 86
Texas Co. 4th Cover
Thew Shovel Co. 132
Timber Structures 94
Timken Roller Bearing Co. 18
The Tube Slab Co. 84

U. S. Rubber Co. (Tire & Mechanical) 24

Waukesha Motor Co. 92
Weil Pump Co. 108
Wild Heerbrugg Instruments 12
Worthington Corp. 66-67

Yuba Mfg. Div. Yuba Consol. Ind. Inc. 139

Professional Services 154

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 148-150
Educational 151
Notices
Auction 153
Proposals 146-148
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 151-153

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member ABC

Number of copies of this issue printed 82,056

D. S. ROBERTSON, Advertising Sales Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES

New York, 2—500 5th Ave.,
C. D. Neulen, H. T. Olsen
J. C. White

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

Philadelphia, 3—17th and Sansome Sts.,
D. G. Jensen, D. L. Kates

Cleveland, 13—1164 Illuminating Bldg.,
55 Public Square
F. P. DiToro, E. B. Mingle Jr.

Detroit, 28—Penobscot Bldg.,
J. A. Houghton, R. I. Mace

St. Louis, 8—Continental Bldg.,
B. F. Horn

Los Angeles, 17—1125 W. Sixth St.,
H. L. Keeler

Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Billian

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
E. E. Schirmer

Pittsburgh, 22—1111 Oliver Bldg.,
M. Russell

Denver, 2—1740 Broadway
J. W. Patten

OTHER SALES OFFICES:

Boston, 16—350 Park Square Bldg.,

Great Britain—Herbert Lagler, McGraw-Hill House, 95 Farrington St., London, E. C. 4

Europe—Michael R. Zeynel, Am Leonhardsbrunn 12, Frankfort/Main, Germany

Field Work for Consultants

THE QUESTION of how much supervision of construction consulting engineers are doing is answered in this issue (p. 25) with data from a number of representative firms. The answer is certainly that they are doing a great deal of this field work.

It might have been presumed that this facet of the private practitioner's services declined generally when it fell off for highway engineering firms at the end of the tollroad era. But this apparently was not the case. Many consultants had their best year just this past year; only a few had their peak activity during the turnpike years. Furthermore, the consultants who now see their field activity increasing outnumber those experiencing or predicting decreases.

So much for the prime purpose of this study: It establishes that consultants in general do a considerable amount of supervision of construction, and it gives some quantitative measures of this activity, based on a fair sampling of firms.

A secondary purpose was to find whether consultants feel any obligation to supervise construction of the projects they design. Finding: They quite generally do. Many insist on this right. Some perform the service whether paid for it or not. Others earnestly seek the assignment, but obviously can't force their client into agreement on it. Many interesting comments come from consultants who argue why they should supervise construction of the projects they design—comments which for the most part have the strength of logic on their side.

It was not a prime purpose of this study to set forth the values of having consulting firms supervise construction, in opposition to the owner's own engineering force doing the work. (Only consultants were contacted—not their clients.) However, sentiment of the private practitioners on the virtues of their being permitted to supervise what they design was expressed so strongly that their frank and free comments are reported along with other findings of this survey.

It is apparent that the consulting firms most vocally dissatisfied with the amount of construction supervision they are being engaged to do are among those primarily in the highway field. A predominant number in this group will get to supervise only 10% of the construction it designs. And this, we believe, is unfortunate. Engineering firms should be engaged for detailed supervision of their designs even if it means a decrease in the office work they can handle.

The highway engineering firms are vocal, yet they seem powerless to hold out for the right to supervise against the state highway departments—especially since the state agencies are backed by Bureau of Public Roads policy when it comes to the federal highway program. As one very candid consultant explains the situation, his firm has a sizable payroll that demands a continuous flow of work. He wants field as well as office work, but frequently he's left with no choice. It is evident among highway consulting firms that the demand is for interstate program work: design and/or supervision. For either or both they are very ready, willing and able.

Wrong Ways to Get Jobs

CONSULTING ENGINEERS can play an important part in carrying the expanded road program to a successful conclusion. It is therefore regrettable when some among them damage their cause by use of unwise methods to secure engagements.

In one state, for example, some consultants reportedly went over the head of the state highway department to seek the help of the commission and the governor in getting a design job for a substantial mileage of an interstate route. The result has been that the highway department has reanalyzed its program, and now plans to do all design work with state employees. The reasoning: This is better than letting engineering decisions—such as selection of consultants—get away from state engineers.

There have been instances, too, in which consulting firms have presented low fee schedules and exaggerated experience records to obtain work. Unsatisfactory experience with such groups has caused highway officials to think twice before awarding further design contracts even to well qualified firms.

There are many states that need and are making effective use of consulting firms in their highway programs, but it is obvious that the consulting engineering fraternity is being hurt by such practices as noted above.

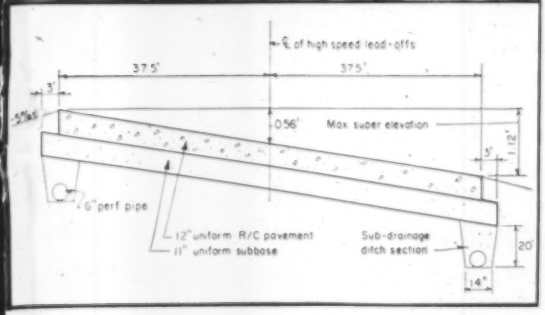
Here is a problem to which consulting engineers and state and federal highway officials should devote some cooperative attention. The highway program requires the best in planning and design talent. Large amounts of this talent are available in consulting engineer firms. The great abilities of very many capable firms must not be placed out of reach by the wrong job-seeking methods of a few.

Further on Consultants

AS ONE FINAL THOUGHT on the private practice of engineering, we are reminded of a good definition of a consultant. It is brought to mind by the news reported last week that Leslie N. McClellan has retired as chief engineer of the U.S. Bureau of Reclamation, to fulfill a long-held dream of becoming a private consultant. Mr. McClellan should do well, being considerably more accomplished than the definition requires. It is a definition Karl Terzaghi expressed in a recent paper before the Boston Society of Civil Engineers: "A consultant is a person who is supposed to know more about a subject under consideration than his client."

First High-Speed Runway Turn-Off

Weir Cook Municipal Airport, Indianapolis, Ind.
Engineers: Clyde E. Williams & Assoc., Inc., South Bend, Ind.
Contractor: Gast Construction Co., Warsaw, Ind.
Photo Above: in-construction view.
Below: new runway and related pavement.
Drawing: cross section through high-speed turn-off.



POZZOLITH* employed in paving to obtain unique combination of advantages

Banked turn-offs that allow planes to clear the main runway at speeds up to 63 mph, are a feature of Indianapolis airport's new field extension comprising 180,000 sq. yds. of concrete slab . . . with POZZOLITH.

Use of POZZOLITH provided the following unique combination of advantages:

1. ***Work Speeded Up*** **. . . because high 3-day strength permitted contractor's early use of adjacent paving.**
2. ***No "Downhill" Movement*** **on super depressed turn-offs . . . because mix having good workability was obtained with 1½" slump.**
3. ***Lower Cost-In-Place*** **concrete . . . because of savings in placing and finishing and because of higher strength resulting from low water content.**

Call in your Master Builders fieldman for full information on these and other advantages of POZZOLITH for *your* projects.

* POZZOLITH—registered trademark of The Master Builders Company for its time-tested water-reducing, air-entraining admixture for concrete.

THE MASTER BUILDERS CO.
DIVISION OF AMERICAN-MARIETTA CO.

General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • *Export:* New York 17, N. Y.
Branch Offices In All Principal Cities • *Cable: Mastmethod, N. Y.*

Laying one course of the 7½-inch Texaco Asphaltic Concrete foundation on US Route 301 in Sussex County, Va.

Contractor
Adams Construction Company, Roanoke, Va.

What type Asphalt pavement for Interstate Highways?

Virginia supplies one answer to that question on the new northbound lane under construction on 11 miles of US Route 301. The most heavily traveled north-south truck route across Virginia, US-301 is part of the new Interstate Highway System.

The foundation for this important project consists of a 7½-inch thickness of coarse-graded, plant-mixed Texaco Asphaltic Concrete, laid in three courses on an 8-inch subbase of selected borrow material. The wearing surface is plant-mixed Texaco Sand Asphalt, laid to a compacted thickness of 1½ inches.

This is one of a number of heavy-duty asphalt pavement designs suitable for Interstate Highway traffic.

Asphalt highways are equal in durability, lower in average upkeep cost, superior in riding quality and *cost substantially less* than rigid highways having the same load-bearing capacity. The important savings afforded by Asphalt become more and more vital to highway officials and motorists, as a result of currently rising road building costs.

Helpful information on methods and materials recommended for all types of Asphalt construction for highways and streets is provided in two free Texaco booklets. Copies may be obtained without obligation by writing our nearest office.

The existing asphalt pavement on US-301 will be the southbound lane of the new, divided Interstate Highway.

Section of the Plant-Mixed Texaco Sand-Asphalt wearing surface on new, northbound lane of US-301.

ENGINEERING · RESEARCH · EDUCATION
THE ASPHALT INSTITUTE
MEMBER

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Minneapolis 3, Philadelphia 2 Richmond 19

TEXACO
REG. T. M.

TEXACO ASPHALT